

SECTION H: LANDSCAPING PLANS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM-B-CR 2292(101)3	SHEET H1	TOTAL SHEETS H25
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Plotting Date: 11/15/2024

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END IM-B-CR 2292(101)3

NB Cliff Ave. 126+02.67
 Located 1155.78 feet North and
 36.79 feet West of the
 southeast corner of Section 28 -
 Township 101 North -
 Range 49 West of the 5th PM.

STR. NO. 50-211-231

STR. NO. 50-211-230

BEGIN IM-B-CR 2292(101)3

NB I-229 Station 178+00.00
 Located 917.81 feet South and
 3016.64 feet West of the
 northeast corner of Section 33 -
 Township 101 North -
 Range 49 West of the 5th PM.
 MRM 003.26+0.243

END IM-B-CR 2292(101)3

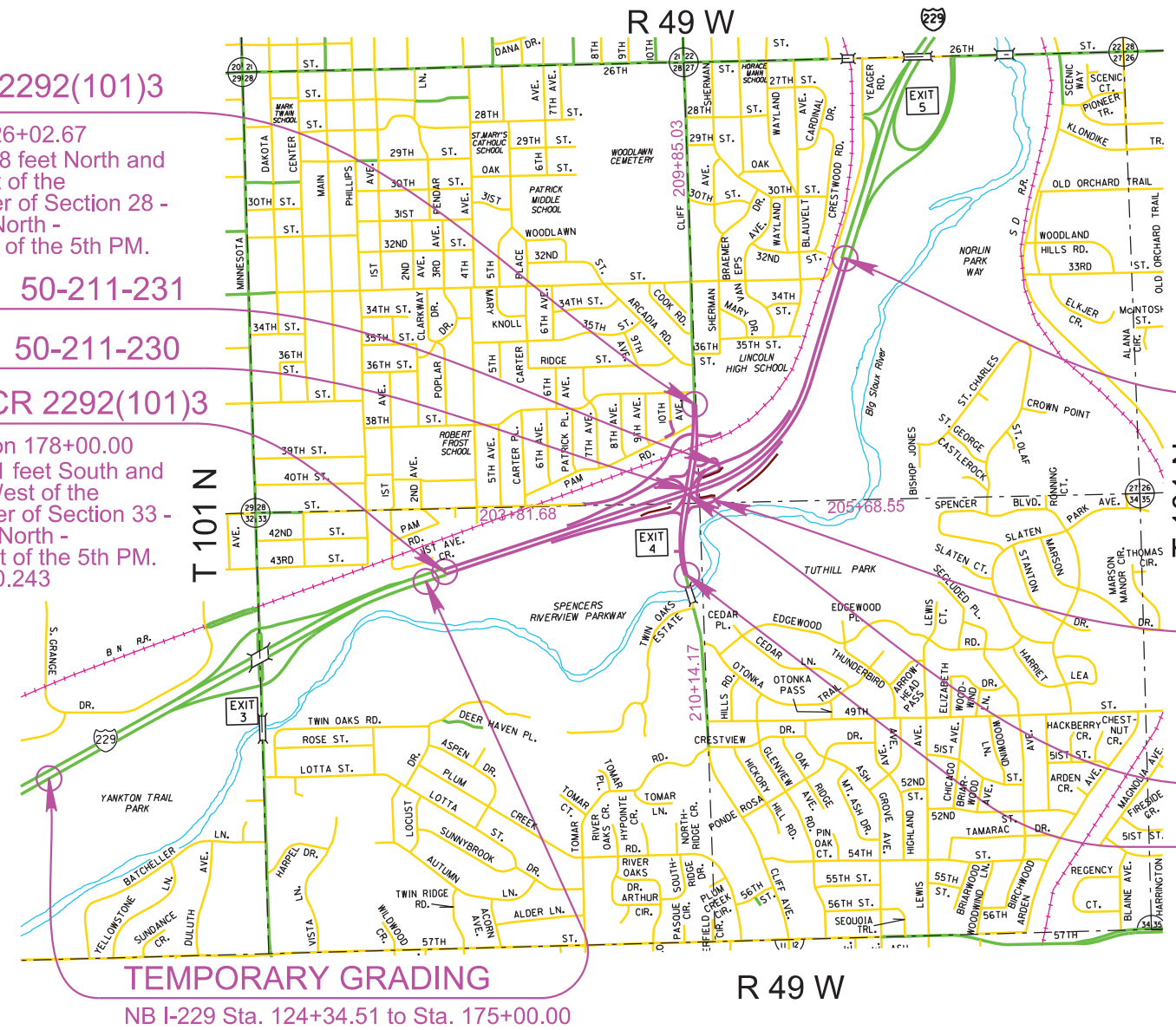
NB I-229 Station 245+03.64
 Located 2934.62 feet North and
 1765.55 feet East of the
 southwest corner of Section 27 -
 Township 101 North -
 Range 49 West of the 5th PM.
 MRM 004.37+0.465

STR. NO. 50-210-231

STR. NO. 50-210-230

BEGIN IM-B-CR 2292(101)3

NB Cliff Ave. Station 105+40.80
 Located 890.68 feet South and
 115.85 feet West of the
 northeast corner of Section 33 -
 Township 101 North -
 Range 49 West of the 5th PM.



TEMPORARY GRADING

NB I-229 Sta. 124+34.51 to Sta. 175+00.00



SECTION H ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E6300	Water for Vegetation	22.0	MGal
230E0020	Contractor Furnished Topsoil	2,178	CuYd
380E0200	Colored Nonreinforced PCC Pavement	1,614.0	SqYd
380E2566	6" Barrier Type Colored Median PCC Pavement	1,756.0	SqYd
530E0490	Boulder Retaining Wall	587	SqFt
680E0206	6" Perforated PVC Drain Pipe with Sleeve	576	Ft
680E0226	6" PVC Outlet Pipe	263	Ft
680E2500	Porous Backfill	121.0	Ton
731E0100	Fertilizing	600	Lb
734E2022	Bridge Berm Slope Protection, Quarried Aggregate	1,076.0	SqYd
735E1000	Shrub, Furnish and Plant	257	Each
735E1360	6' Coniferous Evergreen, Furnish and Plant	21	Each
735E2220	2" Caliper Deciduous Tree, Furnish and Plant	48	Each
735E2225	2.5" Caliper Deciduous Tree, Furnish and Plant	94	Each
735E5010	1 Gallon Ornamental Grass, Furnish and Plant	741	Each
831E0100	Type A Drainage Fabric	1,076	SqYd
900E5150	Landscape Edging	240	Ft
900E5151	Ornamental Landscaping Boulders	33	Each
900E5152	Weed Barrier Fabric	1,088	SqYd
900E5157	4" Depth Shredded Bark Mulch	1,830.0	SqYd
900E5163	Ornamental Landscape Feature	4	Each
900E5430	Irrigation System	Lump Sum	LS

GENERAL NOTES

The Contractor must notify the 811 One Call center to request the location of all utilities within the construction area prior to any construction. Contractor is responsible for locating all private utilities not covered by 811 one call. Notify the Engineer of any discrepancies.

Contractor is responsible for protection of all existing conditions, improvements, vegetation and utilities to remain. Any damage must be repaired by the Contractor to the satisfaction of the Owner at no additional cost to the project.

The Contractor will construct all items within this contract in accordance with all state and local codes, regulations and engineering standards. Contractor to coordinate all work within the public right of way or streets with the appropriate jurisdictions.

All work will be in accordance with OSHA codes and standards. Nothing indicated on these drawings will relieve the Contractor from complying with any appropriate safety regulations.

LANDSCAPE ARCHITECT

Contact Confluence with a minimum of 48 hours advance notice where notes indicate field verification or approval by Landscape Architect. 605-339-1205

CONTRACTOR FURNISHED TOPSOIL - LANDSCAPED MEDIANS

Contractor furnished topsoil will be free from clay lumps, stones, coarse gravel, or similar objects larger than 1/2 inch in diameter. Brush, stumps, roots, wood, objectionable weeds, litter, or any other material which may be harmful to plant growth will not be allowed. Organic material will be decomposed.

Planting soil will be placed in planting beds to the depth indicated on drawings and details. The basis of payment for the blended planting soil mix will be per cubic yard for 'Contractor Furnished Topsoil'.

Planting Soil will be manufactured by blending imported topsoil, compost and sand.

Imported Topsoil: Soil provided will be free of stones 1 inch or larger in any dimension, roots and other extraneous or undesirable material harmful to plant growth.

Topsoil will be lightly screened through a 2-inch square, or larger, opening to break up large peds (clumps/clods) and remove coarse roots and stones. Total combined volume of soil clods, stones, roots may not exceed 5% of the total topsoil volume.

The Contractor will submit to the Engineer the prospective source for the topsoil and sand at least 1 month prior to time of placement to allow adequate time for inspecting, testing, and approving the source.

Compost: Screened leaf/grass clipping compost from the Sioux Falls Regional Landfill will be made available to the Contractor at no charge for use on this project. The Contractor is responsible for transportation of the material. All costs are to be incidental to the appropriate bid items.

Contact: Ryan Bechtold (605) 367-8166.

Coarse Sand: SD DOT Section 800 Fine Aggregate.

IMPORTED TOPSOIL		
	Minimum	Maximum
Clay	15%	25%
Combined Silt & Clay Content	-	55%
Sand	10%	60%
Organic Matter (as determined by dry weight)	2%	6%
pH (ASTM 5268)	6.0	7.5
Soluble Salt Level		2 mmho/cm
Texture will be determined by USDA gradation nomenclature system.		

The Contractor will mix planting soils off site. Mix sand and compost together first then add to the topsoil. Mix with a loader to loosely incorporate the topsoil into the sand/compost mix prior to final blending with a blending machine. The mixed planting soil will be tested to verify compliance with specifications prior to installation.

PLANTING SOIL	
Sieve Designation	Percent Passing
1/4"	100%
#10	82-100%
#30	60-100%
#80	36-68%
#200	18-44%
#400	10-30%
Organic Matter Content	5-8%
pH	6.0-7.0
Phosphorus	40-80 ppm
Potassium	80-160 ppm
Magnesium	40-80 ppm
Estimated proportions for soil mix are as follows, as measured by weight. This may vary depending on soil and sand source provided by the Contractor and will be confirmed through soil testing.	
30% Topsoil	
50% Sand	
20% Compost	

WEED BARRIER FABRIC/LANDSCAPE FABRIC

Weed barrier fabric will be placed at the areas specified in the plans. Weed barrier fabric will be anchored to the ground with 6" U shaped staples. The staples will be placed at a 4' spacing along all edges, overlaps, and throughout the area of weed barrier fabric. The weed barrier fabric will be overlapped 4" between rolls.

Weed barrier fabric will be measured to the nearest square yard. Measurement of the overlaps will not be made.

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All costs for furnishing, handling, and placing the weed barrier fabric including the materials, equipment, labor, and incidentals necessary will be incidental to the contract unit price per square yard for "Weed Barrier Fabric".

The weed barrier fabric will be provided from the list below or an approved alternate:

Weed Barrier Fabric/Landscape Fabric

Product	Manufacturer
Green Line Ground Cover	Thrace-LINQ, Inc. Summerville, SC Phone: 1-800-445-4675
Green Line Landscape	Thrace-LINQ, Inc. Summerville, SC Phone: 1-800-445-4675
Purple Line Landscape	Thrace-LINQ, Inc. Summerville, SC Phone: 1-800-445-4675
Geotex 351	Propex Inc. Chattanooga, TN Phone: 1-800-621-1273 www.geotextile.com
Earthscape 4530	Propex Inc. Chattanooga, TN Phone: 1-800-621-1273
Mirafi Mscape	TenCate Geosynthetics Pendergrass, GA Phone: 1-706-693-2226
Mirafi Mscape Plus	TenCate Geosynthetics Pendergrass, GA Phone: 1-706-693-2226
Typar Professional Landscape Fabric 3301	Fiberweb, Inc. Old Hickory, TN Phone: 1-800-382-8467 www.typarlandscape.com
SRW Pro Plus V	SRW Products 1-800-752-9326 www.srwproducts.com
Pro 5	DeWitt Company Inc. 1-800-888-9669 www.dewittcompany.com

MACHINE INSTALLED WEED BARRIER FABRIC

Installation is done by a weed barrier machine that is attached and pulled by a tractor with a 3-point hitch.

Fabric installation begins by placing a roll on the machine spool (figure 1). Weed barrier fabric is designed to unroll from the bottom instead of the top of the roll (shiny side up).

Before lowering the packing wheels, unroll enough fabric in a straight line to clear the rear shovels.

Carefully lower the packing wheels onto the fabric. Do not crawl under the machine. Cover the end of the fabric with 6 to 10 inches of soil. Initially someone may need to stand on the edge of the fabric to keep it from moving.

Adjust the machine so the rear shovels are 4 to 6 inches into the soil.

During installation it is important to make sure soil adequately covers the fabric edges. If the fabric is installed on slopes, water diversion bars should be formed out of soil at an angle which directs water away from the fabric.

A four-person crew is ideal for weed barrier installation. The crew includes: a tractor operator, someone riding the weed barrier machine marking planting locations with a beginning cut or paint, a person completing an X cut at areas where shrubs will be planted, and a person to shovel soil or place wire staples between the X cuts to hold the fabric down.



MACHINE INSTALLED WEED BARRIER FABRIC - CONTINUED

Tractor tires may also be run along fabric edges after installation to pack soil and further ensure that fabric will be held in place.

All costs for furnishing, handling, and placing the weed barrier fabric including the materials, equipment, labor, and incidentals necessary will be incidental to the contract unit price per square yard for "Weed Barrier Fabric".

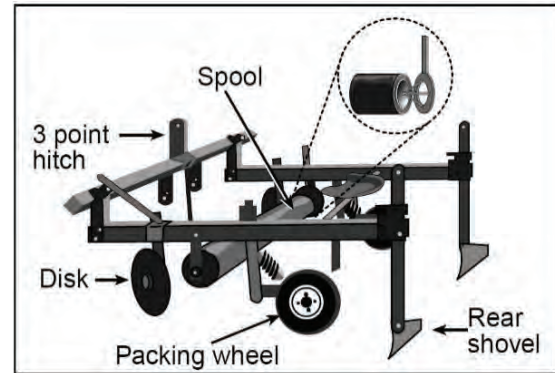


Figure 1: A Weed Barrier Machine

UNDERDRAIN PIPE

The underdrain pipe installation will be per SDDOT Standard specifications Section 680 and as shown on the section H layout plans. The underdrain pipe will be perforated PVC drain pipe that meets the requirements as set forth in SDDOT Standard Specifications Section 680. The underdrain pipe will have a sock wrap material installed around the pipe.

The porous backfill for the underdrain pipe trench will be washed natural rock meeting the gradation requirements of type "Size 1A" as specified in Section 820 – Course Aggregate for use in Portland Cement Concrete of the SDDOT Standard Specifications for Roads and Bridges, Current Edition.

All costs for furnishing, handling, and placing the porous backfill including the materials, equipment, labor, and incidentals necessary will be incidental to the contract unit price per ton for "Porous Backfill".

The drainage fabric wrap around the underdrain pipe trench will be Type B Drainage Fabric material that meets the requirements set forth in SDDOT Standard Specifications Section 831.

The underdrain pipe will empty into the storm sewer inlets along the roadway the underdrain pipe is serving. The underdrain pipe will be cast into the storm sewer inlets with an elevation approved by the Engineer. Within the inlet, the ends of the underdrain pipe will have rodent guards installed over the pipe end, at the interface of the underdrain pipe and storm sewer inlet wall. The rodent guard will cover the entire opening in the drop inlet.

All costs for the underdrain pipe will be included in the contract unit price per linear foot for "6" Perforated PVC Drain Pipe with Sleeve" and "6" PVC Outlet Pipe". This will include, but not be limited to, the following items:

- 6" underdrain pipe
- Sock wrap
- Drainage fabric wrap around porous backfill
- Trenching and backfilling
- Connecting to storm sewer inlets
- Rodent guards installed within storm inlets
- All other appurtenances, equipment, materials and labor to furnish and install the underdrain pipe

IRRIGATION SYSTEM

An irrigation system will be installed where indicated to irrigate landscape medians.

System Design: Existing water pressure is estimated at 95 PSI, information provided by City of Sioux Falls GIS website Fire hydrant flow test on 07/19/2024. Contractor to verify and notify the Engineer of any discrepancies prior to beginning work.

All costs, labor and materials to furnish and install a fully functional irrigation system will be paid for at the contract lump sum price for 'Irrigation System'. This bid item will include, but not be limited to, all costs, labor and materials to furnish and install all excavation, backfill, backflow meter and enclosure, piping, fittings, control cable, and irrigation equipment. Quantities are given for information only, verify quantities.

Pipelines 3 inches and smaller will be vibrated and plowed into the soil to the depths specified. Open trench excavation will be permitted for installation of non-pipeline items. Control wires will be installed in a neat, orderly fashion 2" below pipelines.

Trenches will be backfilled with existing native soils removed during trenching. In the event the excavated soils are not suitable for backfilling and compaction efforts, suitable soil from the site will be traded and used for backfilling. All open excavations, including trencher excavations, will be backfilled and compacted to a minimum of 95 percent standard proctor density.

All disturbed areas will be restored to finished grade and prepared for landscape. Hand grading and raking should be expected within the medians. All final grading will be approved by the Engineer prior to proceeding with landscape or irrigation.

WATER SOURCE

The water service line location has been determined by the Engineer and is shown on the utility plans. The utility Contractor will coordinate the tap and provide the irrigation water service to finished grade.

The irrigation Contractor will furnish all above grade piping, fittings, valves, water meters, backflow preventers and all other appurtenances necessary to provide a functional irrigation water source.

WATER METERS

The City of Sioux Falls has assigned the following addresses to water meter locations:

Meter #	Station	Address	Meter Size	Backflow Size
1	114+01 87'R	3298 S Cliff Avenue	1"	1"
2	117+61 56'R	3398 S Cliff Avenue	1"	1"

The water meters will be purchased by the Contractor from the City of Sioux Falls and will be equipped by the city with the MTU system (wireless read-out system). The water meter with the MTU system will be installed by the city within the backflow and meter enclosure. Contact Steve Menholt (605-367-8814) of the City of Sioux Falls to schedule this installation. The city of Sioux Falls will verify the water meter size for the design flow. The 'Irrigation System' bid item will include all costs to purchase the water meter from the City of Sioux Falls, provide and install necessary fittings, and coordinate installation.

BACKFLOW PREVENTION

As defined by the City of Sioux Falls Cross Connection Control Program, backflow prevention is required. A backflow prevention assembly will be installed per standard plate 900.19. Upon the backflow prevention assembly being put into service, it must be tested for functionality by an ABPA certified backflow assembly tester approved by the City of Sioux Falls.

ENCLOSURE

The backflow preventer, meter and miscellaneous plumbing will be installed within a lockable aluminum enclosure on a cast-in-place concrete pad.

IRRIGATION CONTROL WIRE

14-AWG copper wire, V.L. approved for direct burial and compatible with control system specified. Decoders will be compatible with control system and provided in single-station configurations.

All connections will be made with 3M DBR/Y-6 watertight wire connectors.

INSTALLATION REQUIREMENTS

All irrigation equipment and piping to be installed per manufacturer written recommendations as well as all federal, state, and local laws and ordinances that may apply.

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Irrigation equipment will be installed per details and manufacturer's written requirements. Any deviation from these requirements must be documented in writing prior to changes in the work.

All piping materials will be of type and class noted in the schedule. Minimum depth for lateral piping will be 12". Minimum depth for irrigation mainline is 18". Provide tee or elbow fittings for a clean transition from 18" deep mainline to 12" deep irrigation valves and lateral pipe. Maximum depth for control valves is 8". Minimum depth for sleeves under pavement is 24".

Pipe joints may not be located under roads or pavement. Pipe locations are diagrammatic and may conflict with pavement or other constructed features for clarity purposes only.

Irrigation symbols are oversized for clarity. Comply with general layout shown including pipe sizing and valve locations as related to the irrigation head layout.

Boxes for control valves and irrigation specialties to be PE or ABS and of a size required for servicing valves. Valve box lids to be PE or ABS and lettered with the text 'IRRIGATION'. Valves will be located in a manifold configuration in a shared rectangular shaped box wherever possible. The bottom of the box will be supported by concrete pavers and a minimum of 6" deep layer of clean 3/8" crushed rock or pea gravel drainage material. **Drainage material must be installed prior to setting the valve box.**

Set valves and valve boxes to align with adjacent site features (mow edges, etc.). Where multiple valve boxes occur in a group, align valve and valve boxes to be parallel to the adjacent valves in the group.

Install unions adjacent to each valve for serviceability. Failure to comply with this requirement will result in removal and reinstallation.

The completed system will be adjusted and balanced to result in uniform distribution of water throughout the irrigated area.

Irrigation Contractor will review winterization procedures for irrigation system with the owner's representative. Winterization and spring start up services during the first full year of operation are considered part of this contract.

TESTING

Before testing, all piping is to be thoroughly flushed. Prior to acceptance of work, all pressure piping and fittings will be subjected to a hydrostatic pressure test of 150 psi. This test will include all mainline and lateral piping for a minimum of one hour. Leaks and/or imperfections developing under said pressure will be remedied by the Contractor before final acceptance of the work. Pressure will be maintained while the entire installation is inspected. The Contractor will provide all work connected with the tests. Including temporary above ground piping to connect a riser from each lateral so that the entire system can be tested simultaneously.

Performance Testing: After system is 100% installed, perform a coverage test to determine whether water coverage and operation of the system is adequate for planting, without areas of excessive flooding, dry spots, areas of insufficient overlap, or excessive overspray. If the irrigation system is determined by Owner to be inadequate due to Contractor's workmanship or materials, it will be replaced or repaired at Contractor's expense and both pressure and coverage tests repeated until accepted. All equipment, materials and labor necessary to complete the testing will be incidental to the contract lump sum price for "Irrigation System".



PLANT SCHEDULE

Key	Qty	Plant Type	Size	Spacing
Canopy Trees				
AF	35	Acer x Freemanii 'Sienna' Sienna Glen Maple	2" Cal B&B	
CJ	10	Celtis occidentalis 'JFS-KSU1' Prairie Sentinel Hackberry	2.5 Cal" B&B	
GE	22	Gymnocladus dioicus 'Espresso-JFS' Espresso Kentucky Coffeetree	2.5 Cal" B&B	
QB	28	Quercus bicolor Swamp White Oak	2.5 Cal" B&B	
QW	34	Quercus x warei 'Long' Regal Prince Oak	2.5" Cal B&B	
Ornamental Trees				
PC	13	Malus 'Prairifire' Prairifire Crabapple	2" Cal B&B	
Coniferous Trees				
PG	13	Picea glauca var. densata Black Hills Spruce	6' HT B&B	
PM	8	Picea meyeri Meyer Spruce	6' HT B&B	
Deciduous Shrubs				
CS	12	Cornus sericea 'Cardinal' Cardinal Red-Twig Dogwood	#5	6'-0" O.C
RA	233	Rhus aromatica 'Gro-Low' Grow-Low Fragrant Sumac	#2	6'-0" O.C
SB	12	Syringa 'Bailbridget' Virtual Violet Lilac	#5	6'-0" O.C
Ornamental Grasses				
EA	741	Elymus Arenarius 'Blue Dune' Blue Dune Lyme Grass	#1	4'-0" O.C

PLANT BED PREPARATION

Remove stones larger than 1" in any dimension, sticks, roots, trash and other extraneous matter. Grade the planting areas to a smooth, uniform surface that is loose and uniformly fine textured. Grade to within +/- 0.5" of the finish elevation. Roll and rake, remove ridges, pulverize soil clods to less than 1" and fill depressions to meet finish grades. The Contractor will need prior authorization from the Engineer to commence planting. Plant bed preparation will be incidental to the appropriate bid items.

FERTILIZING – LANDSCAPED MEDIANS

The Contractor will apply an all-natural slow-release fertilizer prior to seeding or placing sod. The all-natural fertilizer will have a minimum guaranteed analysis of 4-4-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 2.07%, a minimum of 4% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer will be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer will have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer will also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer will be applied at a rate of 1,500 pounds per acre in accordance with the manufacturer's recommended method of application.

The all-natural slow-release fertilizer will be as shown below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 www.sustane.com

GENERAL PLANTING NOTES

All plants, trees, and shrubs will conform to or exceed minimum quality standards as defined by the American Nursery and Landscape Association, current edition of American Standard for Nursery Stock, and will be purchased from a Landscape Nursery. Plants, trees, and shrubs furnished will be of the same genus, species, cultivar, and size

as specified in the plans. Species and variety may be substituted only by the approval of the Engineer. Each plant, tree, and shrub will have an identification label.

All plants, trees, and shrubs will bear the same relationship to the finished grade as the plant's original grade before digging. All plants, trees, and shrubs will be planted in accordance with all the drawings and specifications included in the plans.

Planting locations for each individual species will be identified prior to planting. Location will be approved by the Engineer prior to installation.

Hand dig tree planting pits when in close proximity to existing utilities.

All plants, trees, and shrubs will be fertilized.

Within 2 hours after being planted, plants, trees, and shrubs will be watered to thoroughly saturate the backfill soil as this provides settlement and filling of voids in the backfill.

As soon as the initial planting is completed, the Engineer will visually inspect plants, trees, and shrubs for health, vigor, and condition, and will at that time accept or reject them.

The Contractor will provide a one year warranty for all plants, trees, and shrubs. After one year from initial planting, the Engineer will make an inspection and dead, unhealthy, or otherwise not acceptable plants, trees, and shrubs will be replaced by the Contractor at no additional cost to the Project.

All costs for furnishing, handling, storing, fertilizing, and planting the plants, trees, and shrubs including the materials, equipment, labor, preparation of the ground, initial watering if irrigation system is not in place, clean up of the planted areas, and the warranty, must be incidental to the contract unit price per each for the corresponding "Plant, Tree, and Shrub, Furnish and Plant" contract item.

The City of Sioux Falls Parks Department will monitor the trees during the warranty period. If a tree meets the criteria below, the Park Forestry Supervisor will advise the Engineer of the need to meet on site to confirm that the tree is dead. A picture of the dead tree will then be taken, and the tree will be removed by the City of Sioux Falls Forestry Crew. The Engineer will follow up with the contractor to have the tree replaced at no additional cost to the Project.

CRITERIA FOR IDENTIFYING A DEAD TREE:

- Leaves are brown during the summer.
- Tree loses its leaves during the summer.
- Buds are dry and brittle.
- Brittle branches that break when bent.
- The surface beneath the bark of the tree is brown. To check, take a pocket knife and scrape the surface just below the bark. If the surface beneath the bark is green, then the tree is not dead.

Staking of trees will be required for all trees planted on the project. Staking of trees will be incidental to the contract unit price per each tree. No hose and wire will be used for staking.

All costs for furnishing, handling, storing, fertilizing, and planting the plants, trees, and shrubs including the materials, equipment, labor, preparation of the ground, initial watering if irrigation system is not in place, clean up of the planted areas, and the warranty, will be incidental to the contract unit price per each for the corresponding "Plant, Tree, and Shrub, Furnish and Plant" contract item.

Plant and Plant Area Maintenance: The Contractor is responsible for maintaining all plants and plant beds for a period of 45 days after installation, per the following:

- 1) The Contractor is responsible for controlling weeds and mowing all newly seeded, sodded and landscaping areas until a uniform perennial vegetative cover with a density of 70% of the native cover for unpaved areas and areas not covered by permanent structures has been established. The Contractor will also spray and remove any weeds that are present prior to seeding, sodding and installing the landscaping areas. If areas are seeded in late fall, this requirement will remain in effect the following spring.

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2) Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, resetting to proper grades or vertical position and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees and plants free of insects and disease.

3) Fill settled areas with planting soil as necessary. Remove and replace landscape and mulch materials damaged or lost in areas.

4) Protect plants from damage due to landscape operations and operations of other Contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged planting.

5) All costs, labor and materials for the aforementioned plant and plant area maintenance work will be incidental to the landscaping bid items.

Mulch Rings and Tree Watering Bags: Trees located in lawn areas will receive a mulch ring with a minimum diameter of 4 feet and a minimum thickness of 4 inches placed around each individual tree.

A 20-gallon Tree Watering Bag will be provided and installed with each tree installed. Watering Bags will be a Tregator Slow-Release Watering Bag, www.tregator.com, or approved equal. Each tree bag will be refilled at least once per week during the maintenance period.

All costs for furnishing, handling, and placing the mulch rings and watering bags including the materials, equipment, labor and incidentals necessary will be incidental to the contract unit price per each for tree bid items. Watering will be paid under the "Water for Vegetation" bid item.

Plants, Trees and Shrubs: The Contractor is required to provide adequate water for all newly non-irrigated planted landscape material for a period of 45 days after installation.

Included in the estimate of quantities is 22 MGAL's of water for vegetation for the landscape material. This quantity was calculated based on 20 gallons of water per week per non-irrigated tree, plus 18 total gallons for each non-irrigated plant and shrub. See Irrigation Plan for irrigation extents. More or less water for vegetation may be required to ensure adequate growth of the landscape material at the end of the 45-day maintenance period.

An inspection will be performed at the end of the 45-day maintenance period to ensure the landscape material is alive and growing. Maintenance and replacement will be at the expense of the Contractor. Replaced landscape material will be watered as required for original plantings at the expense of the Contractor.

Watering Restrictions: The Contractor must comply with all watering restrictions in place. A listing of watering restrictions can be found on the City's website. If even/odd or more restrictive watering restrictions are in place, a watering permit must be obtained from the Public Works Office. This permit will allow daily watering (outside the noon to five restrictions) for a period of up to 4 weeks. After 4 weeks, the Contractor must comply with the current watering restrictions. For clarification, the whole project will be treated as one address so the watering can occur on the entire project on the same day. Based on weather conditions and current watering restrictions the Contractor may request the seeding or sodding be delayed until weather conditions and watering restrictions are more favorable.

SHREDDED BARK MULCH

Cedar bark mulch will be placed at a thickness of 4 inches in areas shown on the plans after plants are planted.

All costs for furnishing, handling, and placing the shredded bark mulch including the materials, equipment, labor, and incidentals necessary will be incidental to the contract unit price per square yard for "4" Depth Shredded Bark Mulch".



ORNAMENTAL LANDSCAPE FEATURE

All costs to transport and install including steel structure, lighting, conduit and concrete footings will be paid at the unit price per each for 'Ornamental Landscape Feature Set'.

Each Ornamental Landscape Feature will consist of (2) 450 cm height High Grass Pillars and (1) 600 cm height High Grass Pillar.

LANDSCAPE EDGING

Class M6 Concrete will be used in construction of the landscape edging.

All rebar will conform to ASTM A615 Grade 60 and the Standard Specification Sections 480 and 1010. All rebar will have a minimum of 3" clear cover.

The cost for all materials, labor, and incidentals necessary to construct the landscape edging will be incidental to the contract unit price per linear foot for the bid item "Landscape Edging".

The biobarrier fabric will be provided the manufacturer below or an approved alternate.

TYPAR Biobarrier Root Barrier, <https://typargeosynthetics.com>

BOULDER RETAINING WALL

Boulder sizes will be between ±2' x 4' and ±3' x 5' 'natural block' shaped Sioux Quartzite with a height between 15" and 18", hand selected from quarry with uniform top and bottom surfaces.

Boulders to have a minimum weight of 0.8 tons.

Boulders indicated on the plan are schematic. The Landscape Architect will be on site to assist with placement of initial boulders. Boulders placed directly on grade will be buried with approximately 5 inches of the boulder below finished grade.

Fill gaps between boulders with hand placed small stone.

Generally, quartzite stone will be set with striation of the stone running horizontal. Exceptions may occur with direction or approval of the Landscape Architect where accents are desired.

Work not meeting these requirements and the satisfaction of the owner will be replaced with no additional compensation.

Stone placement requires the presence of a full-time stone supervisor on site during construction with at least three years of experience directly related to stone construction.

Remove and legally dispose of all surplus stone and stone not acceptable for use.

All costs for furnishing, handling, and placing the boulders including the aggregate base course, small stone fill, materials, equipment, labor, and incidentals necessary will be incidental to the contract unit price per square foot for "Boulder Retaining Wall".

ORNAMENTAL LANDSCAPING BOULDERS

Boulder sizes will be between ±2' x 4' and ±3' x 5' 'natural block' shaped Sioux Quartzite with a height between 20" and 24", hand selected from quarry with uniform top and bottom surfaces. Furnish and install boulders at the locations indicated in the Section H Landscape Plan.

Boulders to have a minimum weight of 1.1 tons.

All costs for furnishing, handling, and placing the boulders including the aggregate base course, materials, equipment, labor, and incidentals necessary will be incidental to the contract unit price each for "Ornamental Landscaping Boulders".

COLORED CONCRETE

The colored concrete pavement identified in section H will be one of two colored concrete colors, for each of the two colors the contractor will construct up to three 5'x5' mock-up panels of colored concrete at off-site locations selected by the Engineer at least 60 days prior to starting final placement of the colored concrete. The purpose of these mock-up panels is to refine the color to the satisfaction of the Engineer. The mock-up panels are included in the quantities for the bid item "Colored Nonreinforced PCC Pavement".

Subject to the Engineer's approval of the mock-up panels, the colored concrete will have the integral color for Colored Concrete A and Colored Concrete B or an equal approved by the Engineer. See Section H Layout Plan for the colored concrete locations. Modification of the color formula may be required based on the results of the initial mock up panel(s).

Colored Concrete A
Match Rafco Brickform Coffee

Colored Concrete B
Match AMS Standard 595 Color - 33690

Rate of Colored Concrete A and Colored Concrete B per cubic yard of concrete will be in accordance with manufacturer's recommendations. The colored concrete must be cured according to the manufacturer's recommendations with two coats of a non-yellowing acrylic curing and sealing compound. The curing and sealing compound will meet ASTM C309 specifications. The curing and sealing product will be DECRA-SEAL or an equal approved by the Engineer.

DECRA-SEAL
W.R. Meadows, Inc.
1-800-342-5976
www.wrmeadows.com

No white pigmented cure will be used. The Contractor will protect the colored concrete to insure no white pigmented curing compound comes in contact with the colored concrete. All costs for furnishing, handling, and applying the curing and sealing compound, and liquid integral color, including the materials, equipment, labor, and incidentals necessary will be incidental to the contract unit price per square yard for the "6" Barrier Type Colored Median PCC Pavement" and Colored Nonreinforced PCC Pavement" bid items.

COLORED NONREINFORCED PCC PAVEMENT

Concrete for Colored Nonreinforced PCC Pavement will comply with the specifications for Class M6 Concrete.

All costs for furnishing and placing the Colored Nonreinforced PCC Pavement and constructing the reinforced expansion and control joints including labor, equipment and materials will be incidental to the contract unit price square yard for "Colored Nonreinforced PCC Pavement"

6" BARRIER TYPE COLORED MEDIAN PCC PAVEMENT

Concrete for 6" Barrier Type Colored Median PCC Pavement will comply with the specifications for Class M6 Concrete.

All rebar will conform to ASTM A615 Grade 60 and the Standard Specification Sections 480 and 1010. All rebar will have a minimum of 3" clear cover.

This bid item will be used for the section H Layout Plan keynotes "2'-0" Colored Concrete Splash Apron", "5'-0" Colored Concrete Splash Apron" and "6" Barrier Type Colored Median PCC Pavement".

All costs for furnishing and placing the 6" Barrier Type Colored Median PCC Pavement and constructing the expansion and control joints including labor, equipment and materials will be incidental to the contract unit price square yard for "6" Barrier Type Colored Median PCC Pavement".

TABLE OF 6" BARRIER TYPE COLORED MEDIAN PCC PAVEMENT

Station	to	Station	L/R	Quantity (SqYd)
109+37		114+44	L	305
113+35		114+89	R	315
116+65		117+97	R	184
116+25		121+88	L	368
312+81		314+55	L	282
316+38		317+88	L	302
Total:				1,756

BASE COURSE

See section F for costs, quantities and specifications.

FOR BIDDING PURPOSES ONLY

REVISED

STATE OF SOUTH DAKOTA

PROJECT

IM-B-CR 2292(101)3

SHEET

H5

TOTAL SHEETS

H25

FILE: 18107-01 I-229 Exit 4
PLOT DATE: 11/15/2024

REV DATE: 01/15/2025
INITIAL: ETE

JOINTS IN COLORED CONCRETE PAVEMENT

Transverse contraction joints will be formed at intervals of approximately 10 feet by means of a grooving tool, to a depth of at least 1/4 the thickness of the colored concrete pavement.

Expansion Joints to occur every 75' or less for all Colored Nonreinforced PCC Pavement and 6" Barrier Type Colored Median PCC Pavement. See detail 5/H18 for joint measurements.

JOINT SEALANTS

Concrete: Urethane Joint Sealant ASTM C 920
Type: multicomponent (M); Grade: P
Class: 50; Uses Related to Exposure: Traffic (T).
Color: limestone, except where joint is bounded on two sides by colored concrete, in this case the joint will match the lighter of the adjacent colored concrete

Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions. Remove laitance and form-release agents from concrete. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

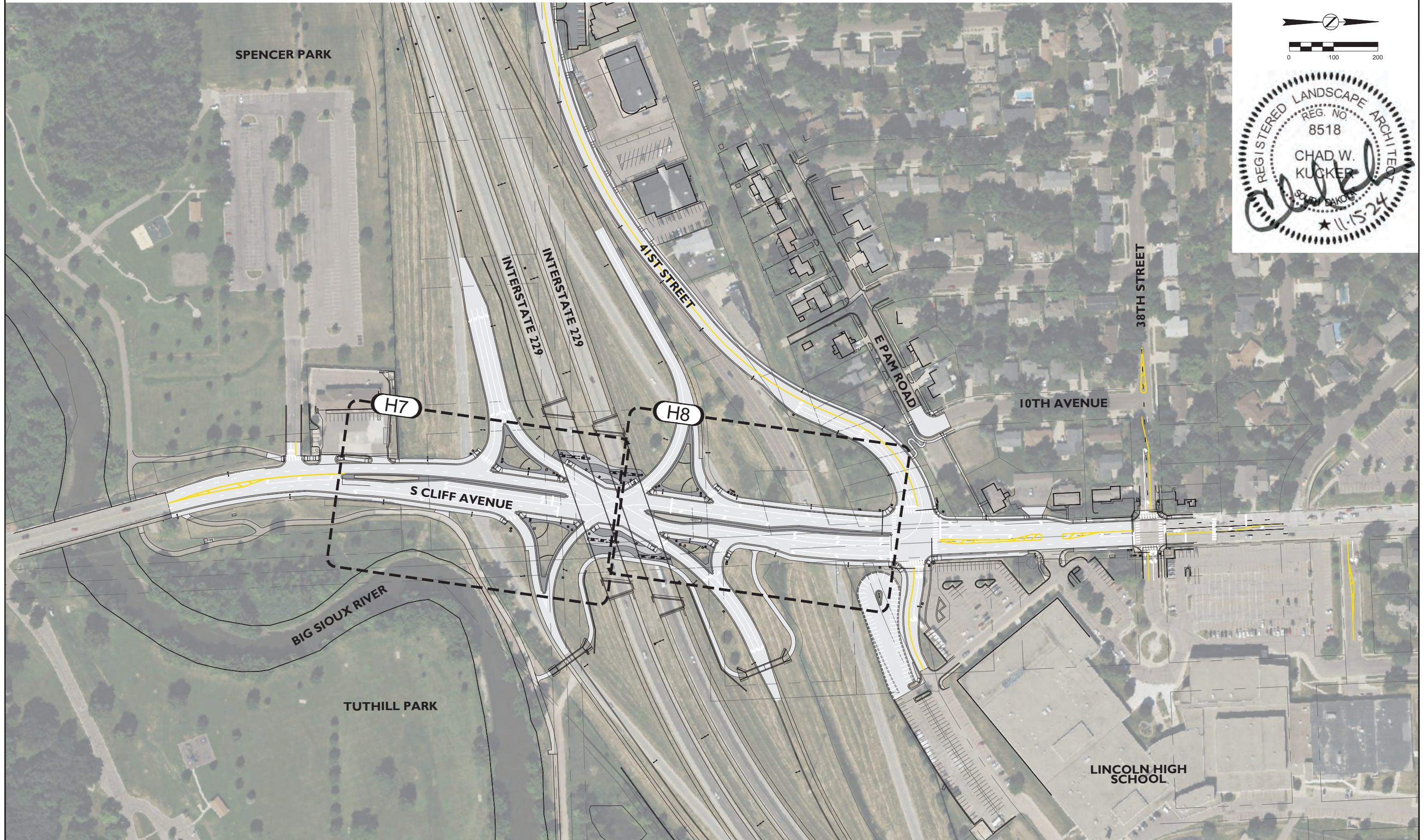


Layout Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H6	H25

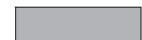
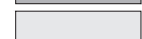
PLOTTING DATE: 11/15/2024



KEYNOTES

- 1. 6" PERFORATED PVC DRAIN PIPE WITH SLEEVE
- 2. 6" PVC OUTLET PIPE (SOLID)
- 3. CONCRETE LANDSCAPE EDGING. 7/H17
- 4. ORNAMENTAL LANDSCAPE FEATURE. 1/H18
- 5. TYPE 'A' MEDIAN. 1/H17
- 6. TYPE 'B' MEDIAN. 3/H17
- 7. 2'-0" COLORED CONCRETE SPLASH APRON. 3/H17
- 8. 5'-0" COLORED CONCRETE SPLASH APRON. 4/H17
- 9. 6" BARRIER TYPE COLORED MEDIAN PCC PAVEMENT. 6/H18
- 10. COLORED NONREINFORCED PCC PAVEMENT. 6/H17
- 11. REINFORCED EXPANSION JOINT. 5/H18
- 12. QUARRIED AGGREGATE WITH TYPE A DRAINAGE FABRIC. 2/H17
- 13. QUARRIED AGGREGATE SLOPE PROTECTION, SEE SECTION E.

COLORED CONCRETE LEGEND

-  COLORED CONCRETE A
-  COLORED CONCRETE B

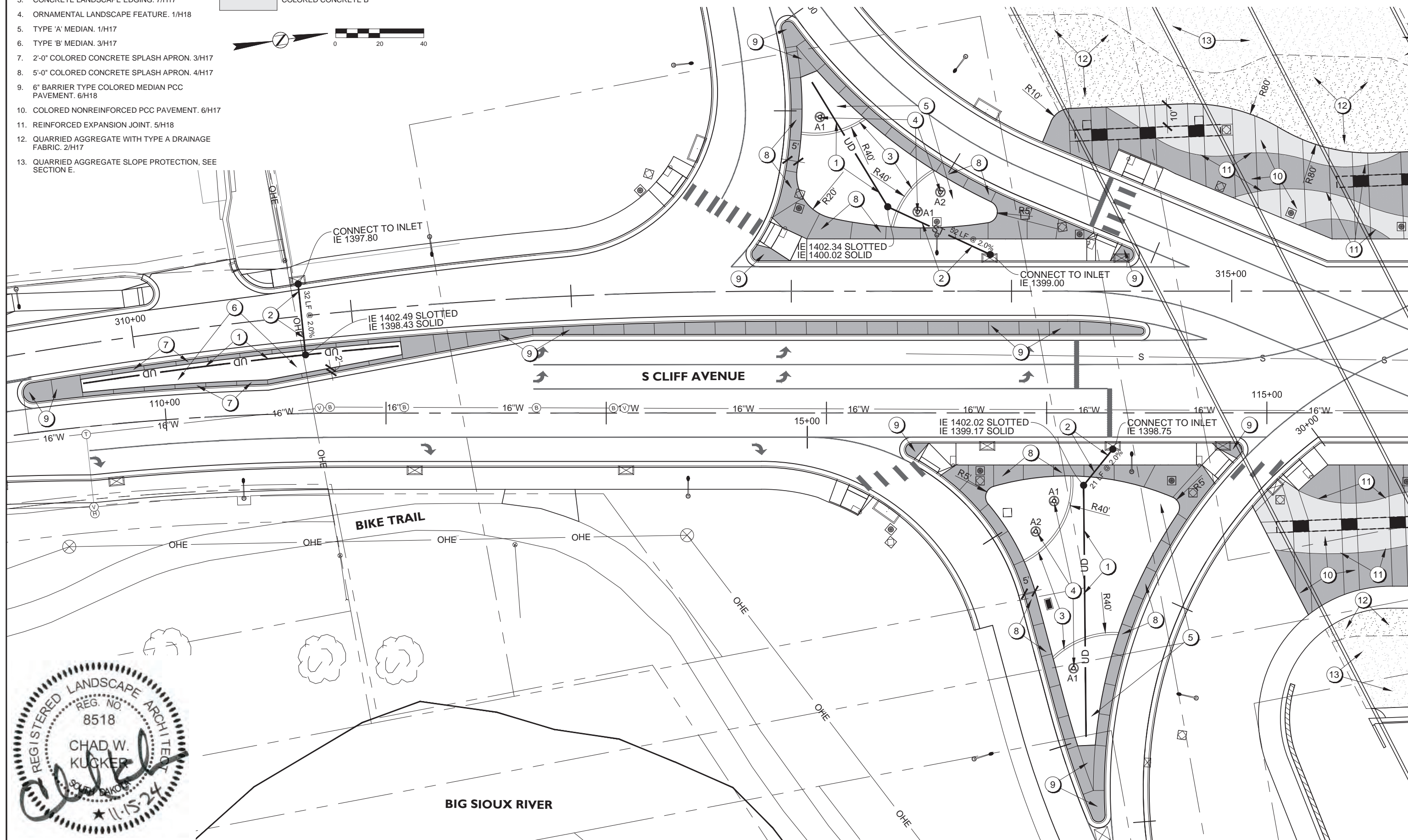


Layout Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H7	H25

PLOTTING DATE: 11/15/2024


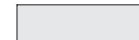


BIG SIOUX RIVER

KEYNOTES

1. 6" PERFORATED PVC DRAIN PIPE WITH SLEEVE
2. 6" PVC OUTLET PIPE (SOLID)
3. CONCRETE LANDSCAPE EDGING. 7/H17
4. ORNAMENTAL LANDSCAPE FEATURE. 1/H18
5. TYPE 'A' MEDIAN. 1/H17
6. TYPE 'B' MEDIAN. 3/H17
7. 2'-0" COLORED CONCRETE SPLASH APRON. 3/H17
8. 5'-0" COLORED CONCRETE SPLASH APRON. 4/H17
9. 6" BARRIER TYPE COLORED MEDIAN PCC PAVEMENT. 6/H18
10. COLORED NONREINFORCED PCC PAVEMENT. 6/H17
11. REINFORCED EXPANSION JOINT. 5/H18
12. QUARRIED AGGREGATE WITH TYPE A DRAINAGE FABRIC. 2/H17
13. QUARRIED AGGREGATE SLOPE PROTECTION, SEE SECTION E.

COLORED CONCRETE LEGEND

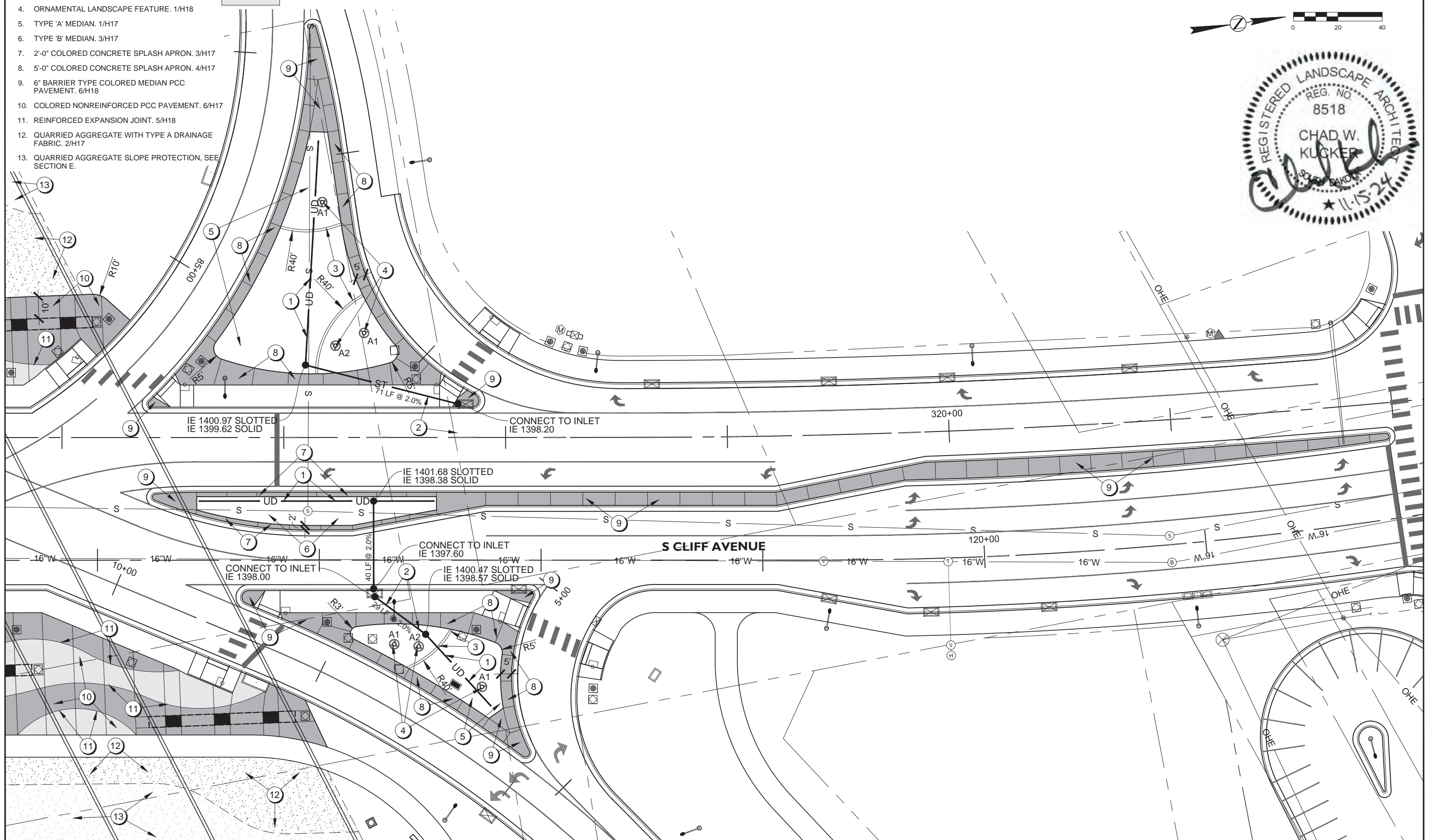
-  COLORED CONCRETE A
-  COLORED CONCRETE B

Layout Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM-B-CR 2292(101)3	SHEET H8	TOTAL SHEETS H25
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PLOTTING DATE: 11/15/2024

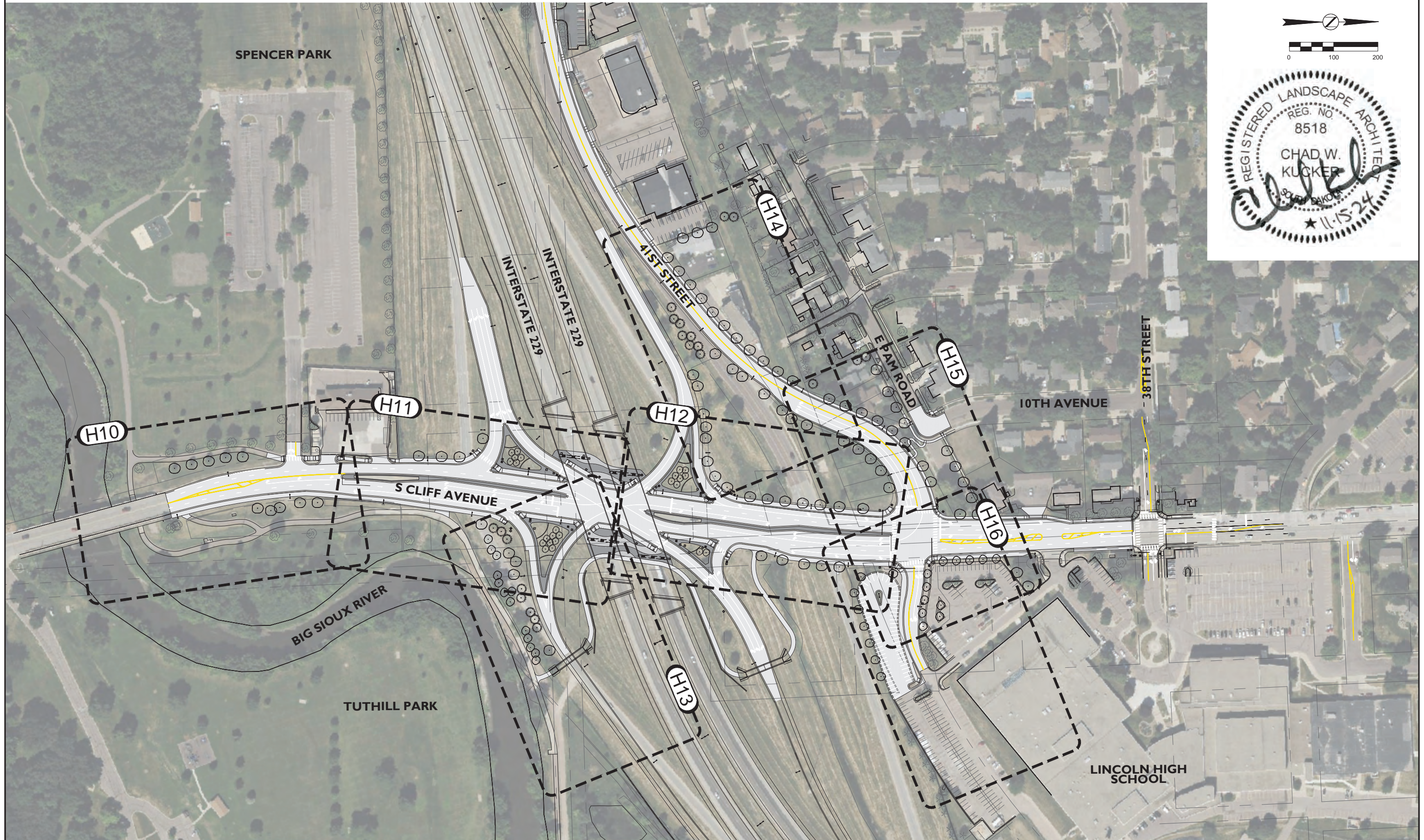


Landscape Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H9	H25

PLOTTING DATE: 11/15/2024



KEYNOTES

- 1. PLANT BED WITH SHREDDED BARK MULCH, NO WEED BARRIER FABRIC
- 2. BERMED PLANT BED WITH WEED BARRIER FABRIC AND SHREDDED BARK MULCH
- 3. BOULDER RETAINING WALL. 8/H17
- 4. ORNAMENTAL LANDSCAPE BOULDER. 7/H18
- 5. MACHINE INSTALLED WEED BARRIER FABRIC. 8/H18
- 6. TILL, FERTILIZE, FINE GRADE AND SEED AREA. SEE SECTION D.

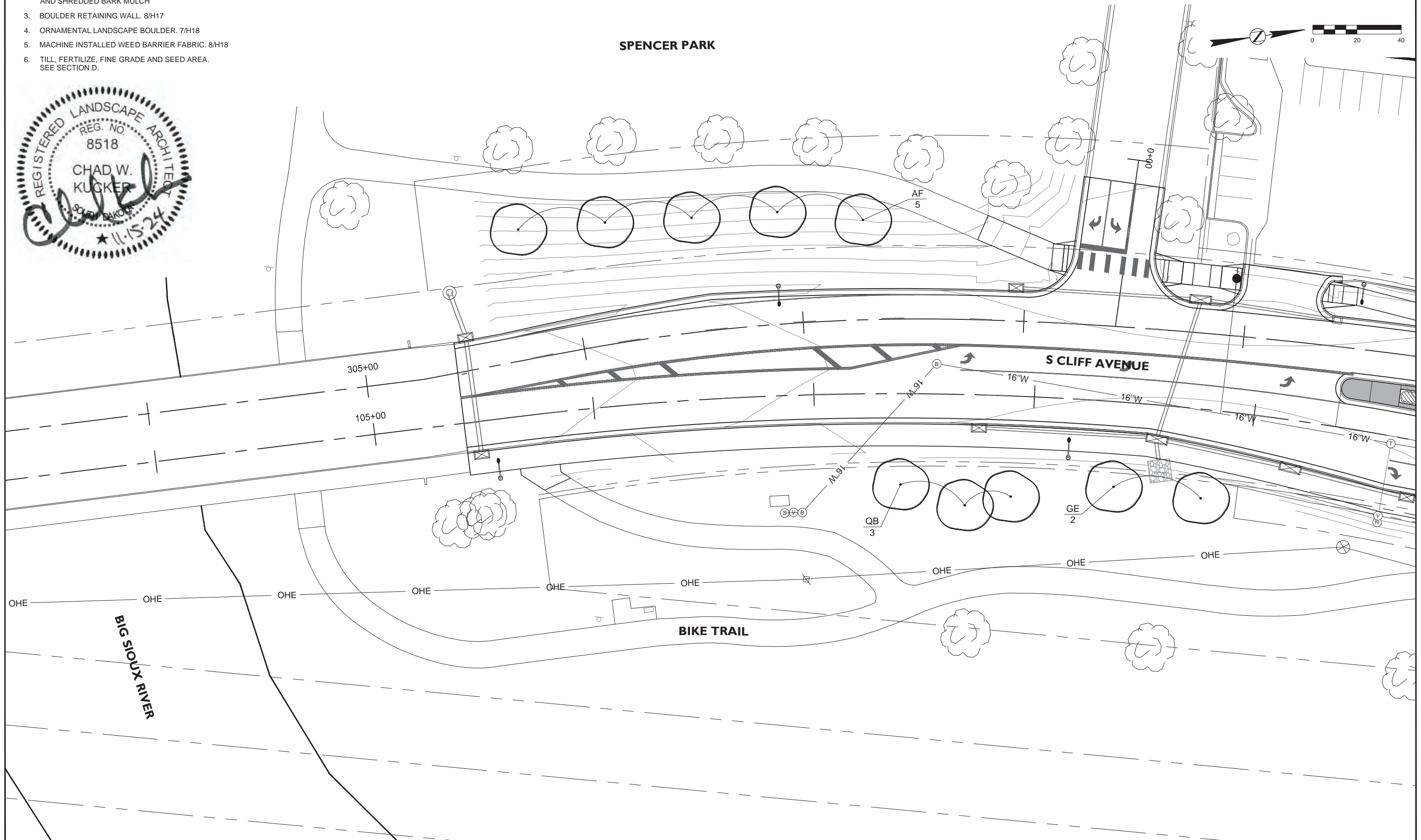
Landscape Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H10	H25

PLOTTING DATE: 11/15/2024

SPENCER PARK



KEYNOTES

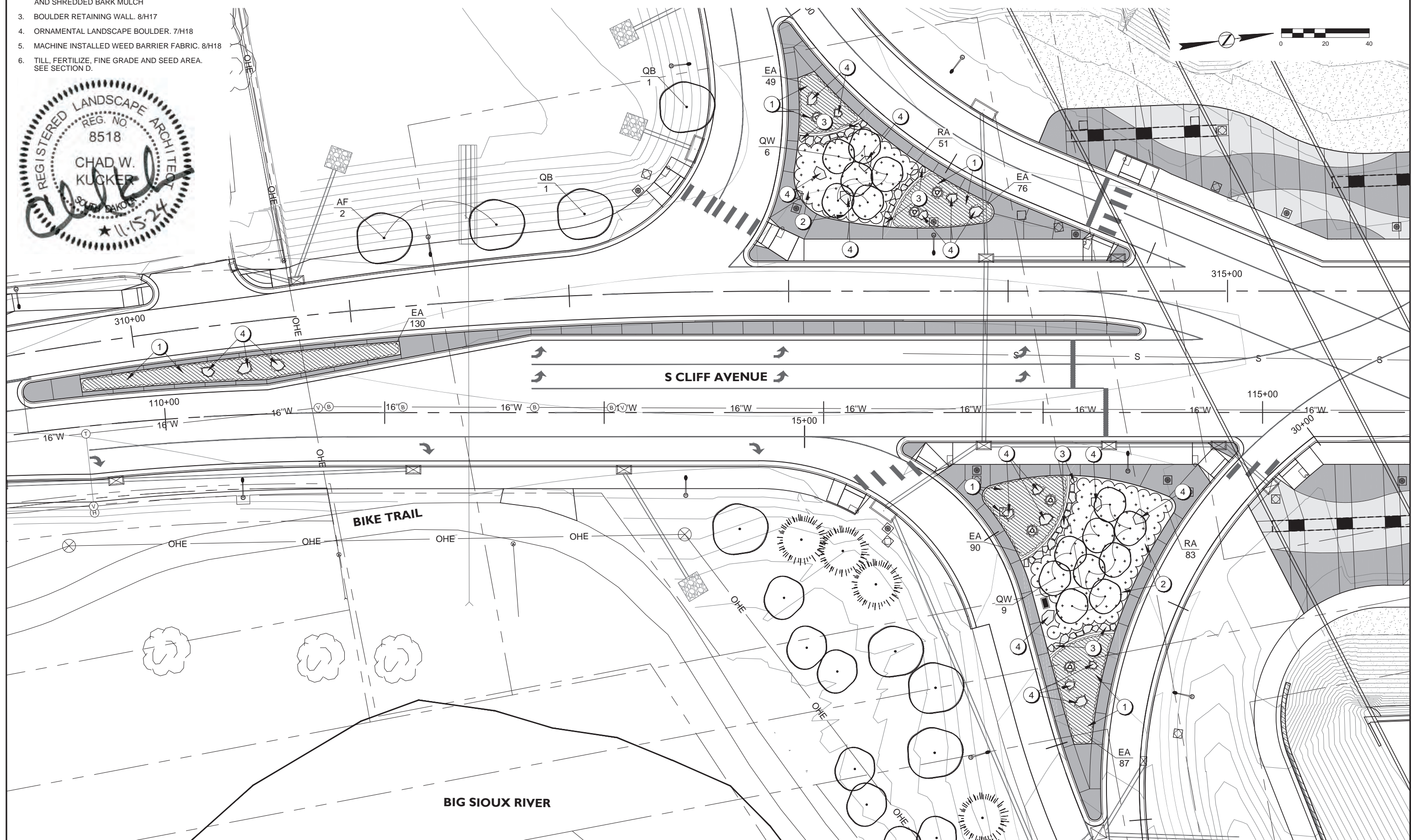
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- 2. BERMED PLANT BED WITH WEED BARRIER FABRIC AND SHREDDED BARK MULCH
- 3. BOULDER RETAINING WALL. 8/H17
- 4. ORNAMENTAL LANDSCAPE BOULDER. 7/H18
- 5. MACHINE INSTALLED WEED BARRIER FABRIC. 8/H18
- 6. TILL, FERTILIZE, FINE GRADE AND SEED AREA. SEE SECTION D.

Landscape Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H11	H25

PLOTTING DATE: 11/15/2024



KEYNOTES

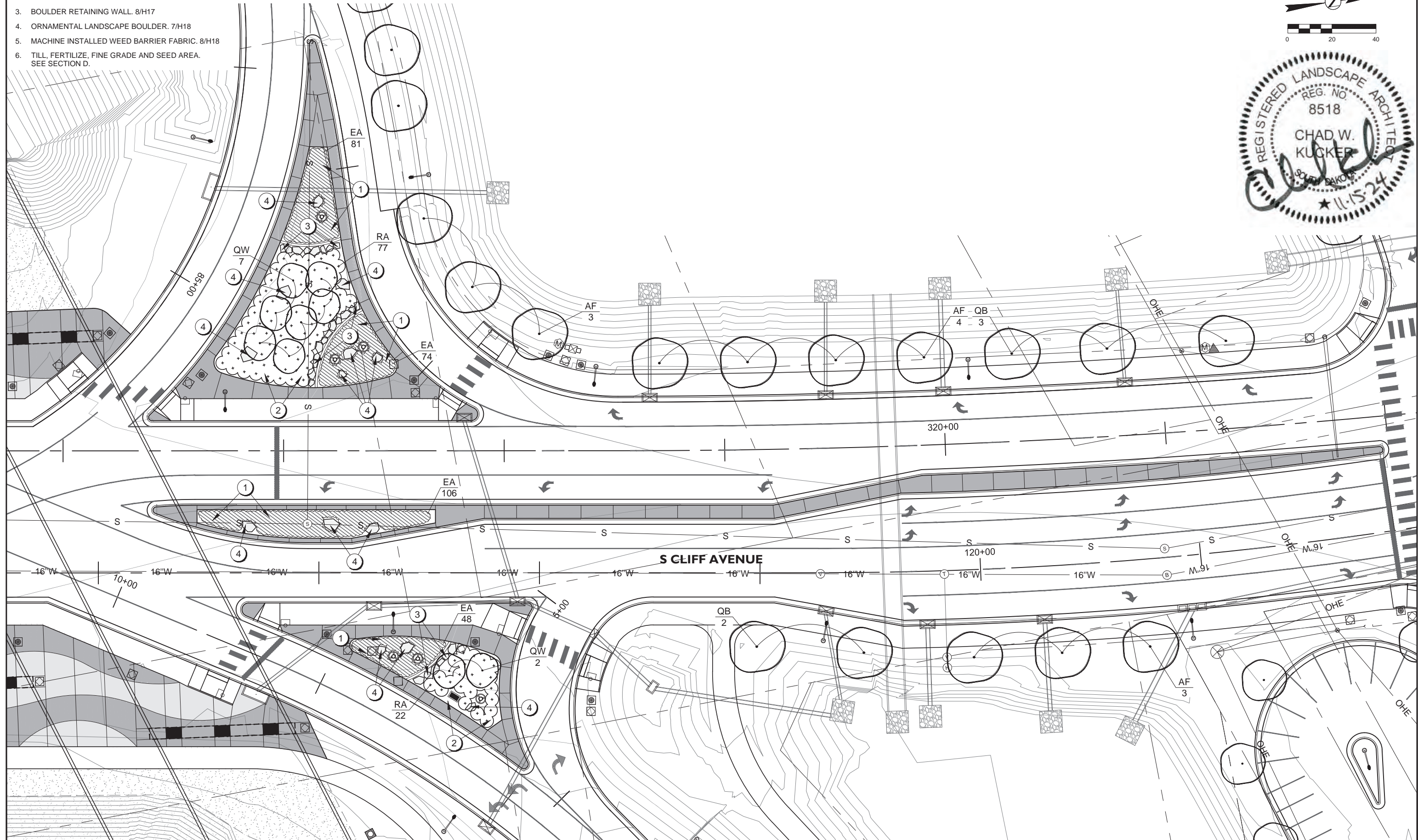
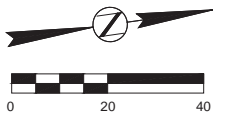
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- 2. BERMED PLANT BED WITH WEED BARRIER FABRIC AND SHREDDED BARK MULCH
- 3. BOULDER RETAINING WALL. 8/H17
- 4. ORNAMENTAL LANDSCAPE BOULDER. 7/H18
- 5. MACHINE INSTALLED WEED BARRIER FABRIC. 8/H18
- 6. TILL, FERTILIZE, FINE GRADE AND SEED AREA. SEE SECTION D.

Landscape Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H12	H25

PLOTTING DATE: 11/15/2024

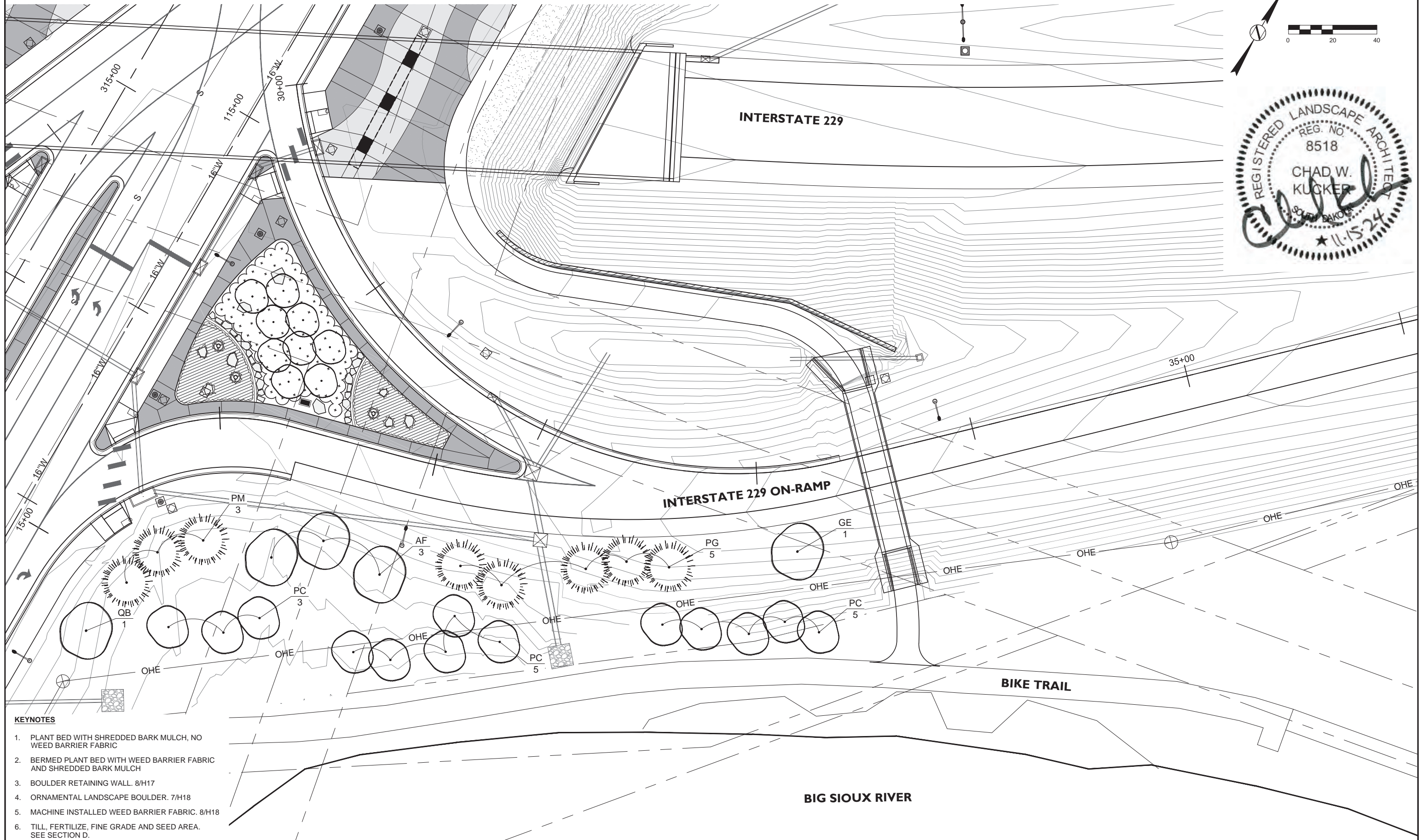


Landscape Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H13	H25

PLOTTING DATE: 11/15/2024



KEYNOTES

1. PLANT BED WITH SHREDDED BARK MULCH, NO WEED BARRIER FABRIC
2. BERMED PLANT BED WITH WEED BARRIER FABRIC AND SHREDDED BARK MULCH
3. BOULDER RETAINING WALL. 8/H17
4. ORNAMENTAL LANDSCAPE BOULDER. 7/H18
5. MACHINE INSTALLED WEED BARRIER FABRIC. 8/H18
6. TILL, FERTILIZE, FINE GRADE AND SEED AREA. SEE SECTION D.

KEYNOTES

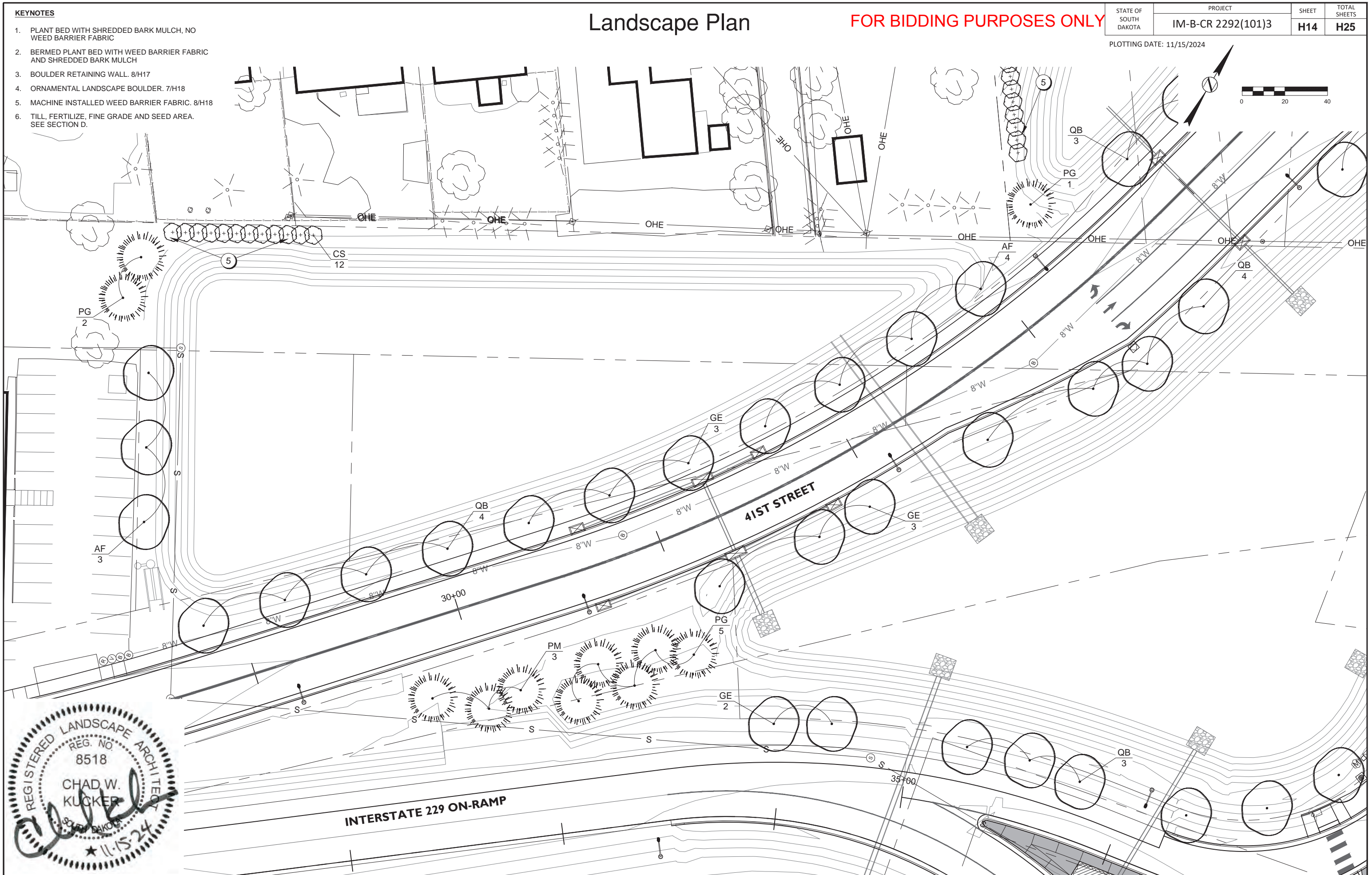
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- 2. BERMED PLANT BED WITH WEED BARRIER FABRIC AND SHREDDED BARK MULCH
- 3. BOULDER RETAINING WALL. 8/H17
- 4. ORNAMENTAL LANDSCAPE BOULDER. 7/H18
- 5. MACHINE INSTALLED WEED BARRIER FABRIC. 8/H18
- 6. TILL, FERTILIZE, FINE GRADE AND SEED AREA. SEE SECTION D.

Landscape Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM-B-CR 2292(101)3	SHEET H14	TOTAL SHEETS H25
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PLOTTING DATE: 11/15/2024



KEYNOTES

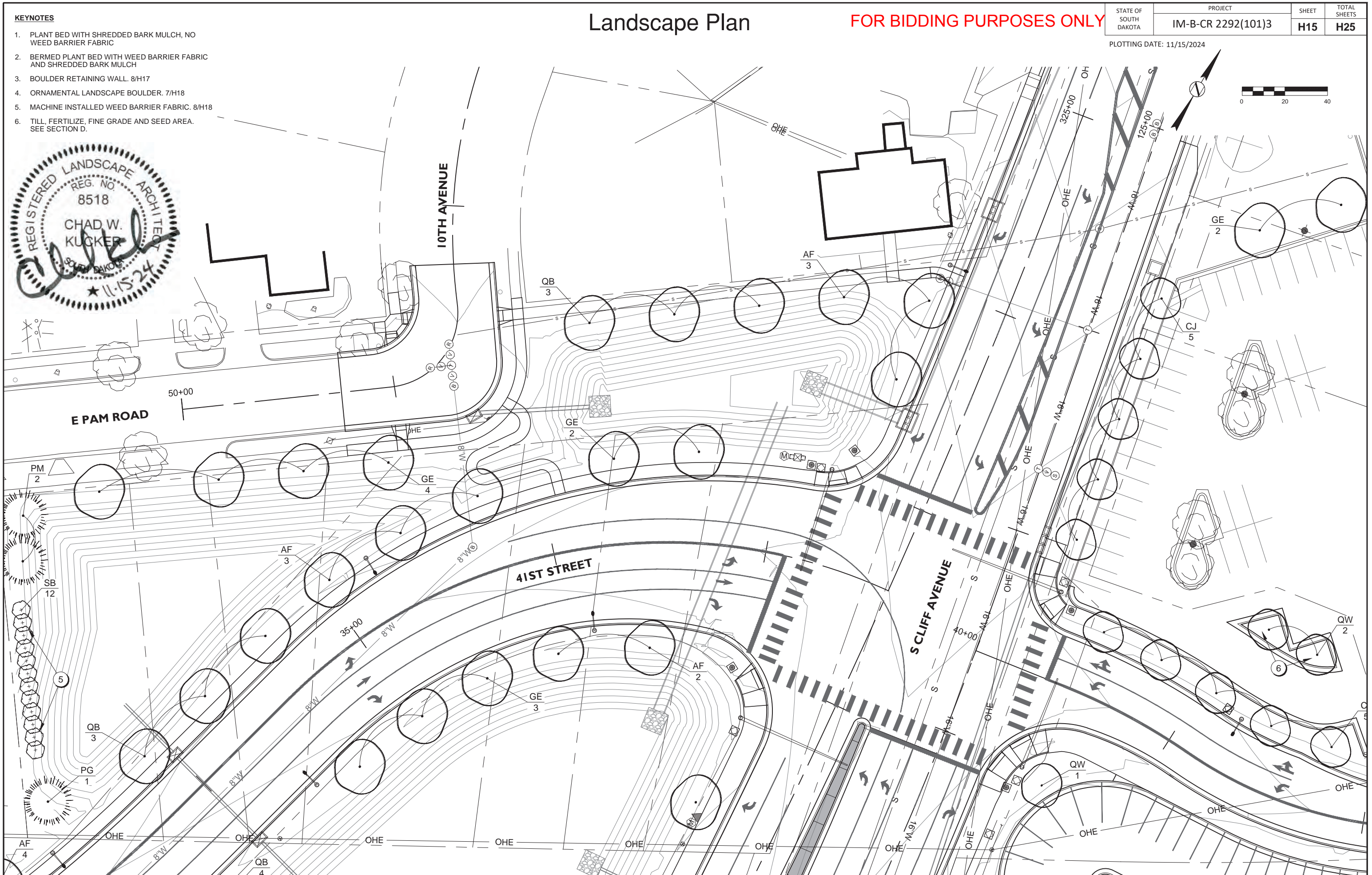
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- 2. BERMED PLANT BED WITH WEED BARRIER FABRIC AND SHREDDED BARK MULCH
- 3. BOULDER RETAINING WALL. 8/H17
- 4. ORNAMENTAL LANDSCAPE BOULDER. 7/H18
- 5. MACHINE INSTALLED WEED BARRIER FABRIC. 8/H18
- 6. TILL, FERTILIZE, FINE GRADE AND SEED AREA. SEE SECTION D.

Landscape Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM-B-CR 2292(101)3	SHEET H15	TOTAL SHEETS H25
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PLOTTING DATE: 11/15/2024

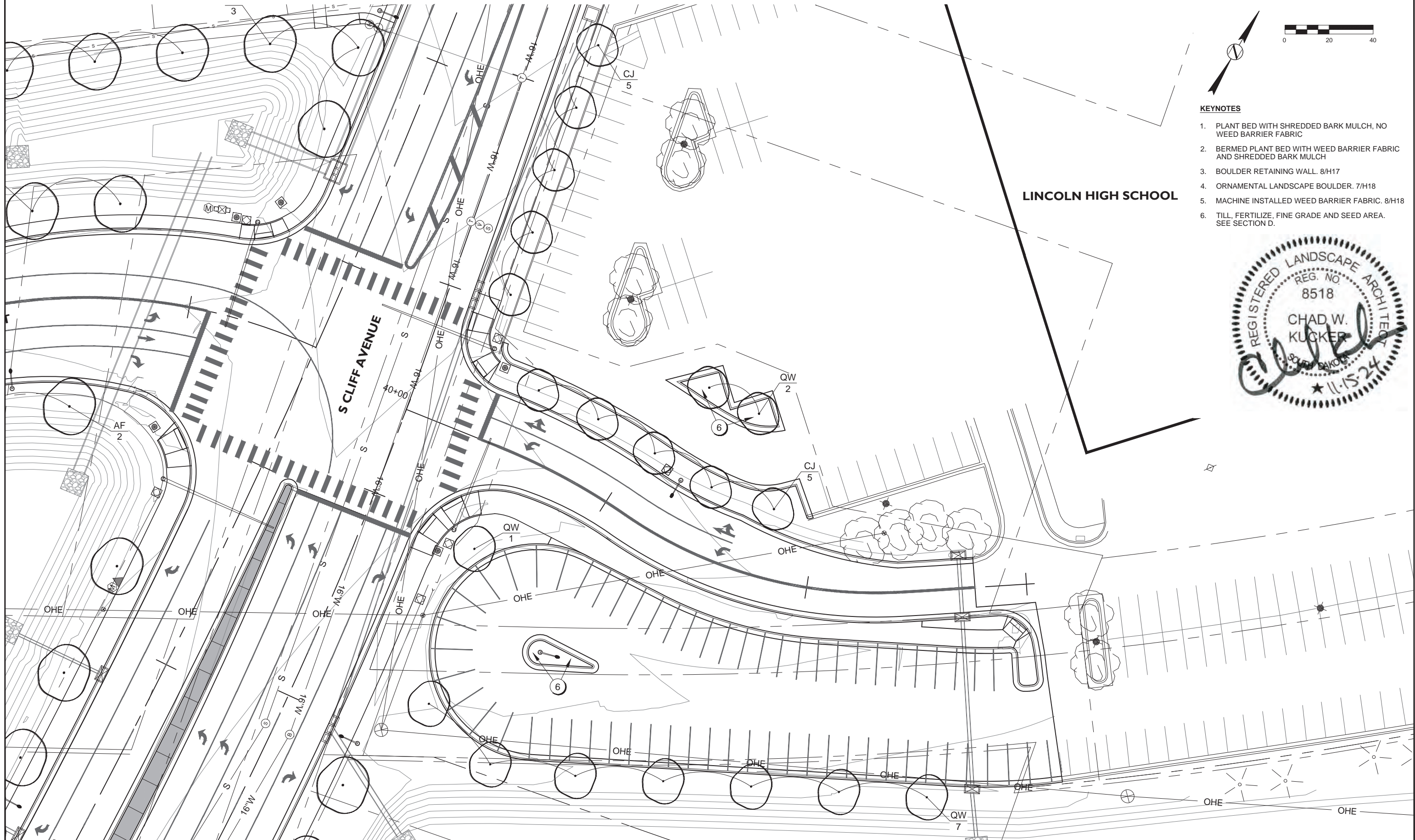


Landscape Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H16	H25

PLOTTING DATE: 11/15/2024



KEYNOTES

1. PLANT BED WITH SHREDDED BARK MULCH, NO WEED BARRIER FABRIC
2. BERMED PLANT BED WITH WEED BARRIER FABRIC AND SHREDDED BARK MULCH
3. BOULDER RETAINING WALL. 8/H17
4. ORNAMENTAL LANDSCAPE BOULDER. 7/H18
5. MACHINE INSTALLED WEED BARRIER FABRIC. 8/H18
6. TILL, FERTILIZE, FINE GRADE AND SEED AREA. SEE SECTION D.



Landscape Details

FOR BIDDING PURPOSES ONLY

REVISED

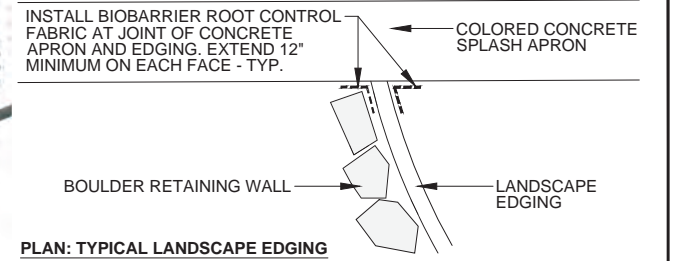
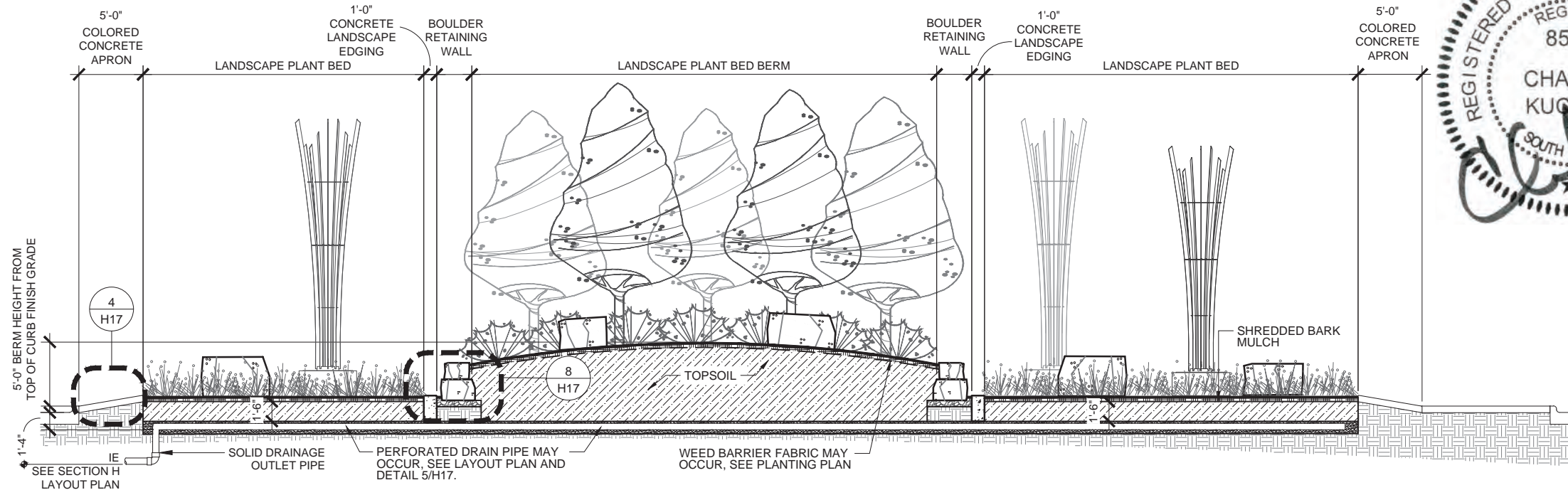
STATE OF SOUTH DAKOTA

PROJECT
IM-B-CR 2292(101)3

SHEET
H17
TOTAL SHEETS
H25

FILE: 18107-01 I-229 Exit 4
PLOTTING DATE: 11/15/2024

REV DATE: 01/15/2025
INITIAL: ETE



REINFORCING SCHEDULE
(For Concrete Landscape Edging)

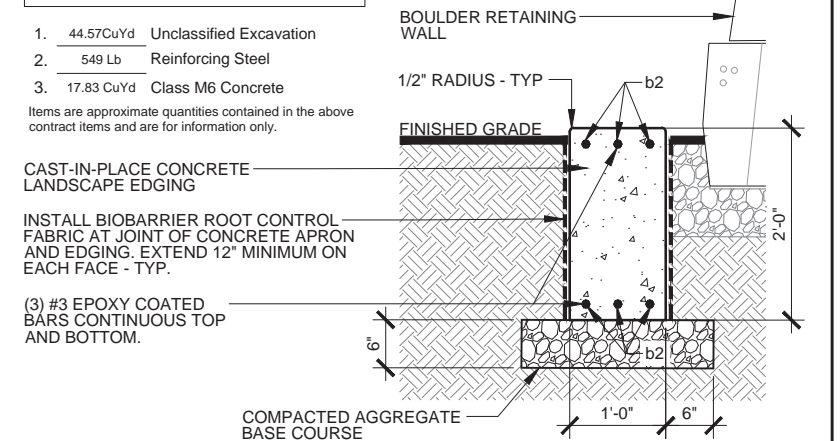
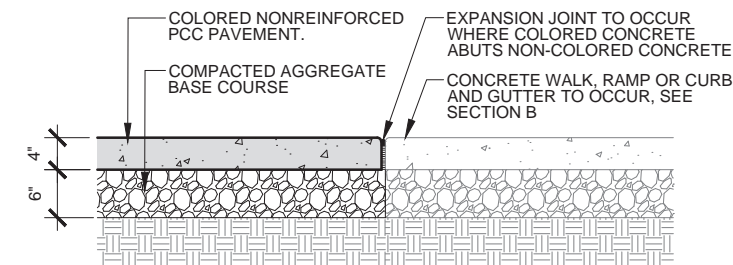
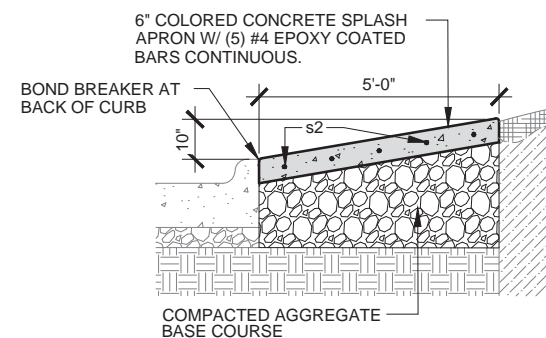
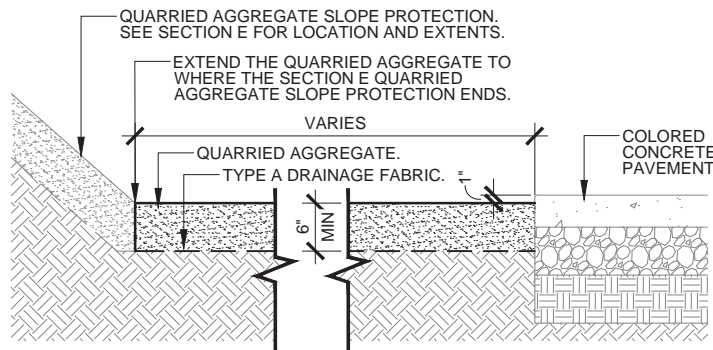
Mark	No.	Size	Length	Type
b2	42	3	VARIES	67

SHAPE CODE
67

- 44.57 CuYd Unclassified Excavation
 - 549 Lb Reinforcing Steel
 - 17.83 CuYd Class M6 Concrete
- Items are approximate quantities contained in the above contract items and are for information only.

1 H17 TYPICAL MEDIAN SECTION A

SCALE: 1/8" = 1'-0"



7 H17 CONCRETE LANDSCAPE EDGING

SCALE: 1/2" = 1'-0"

2 H17 QUARRIED AGGREGATE

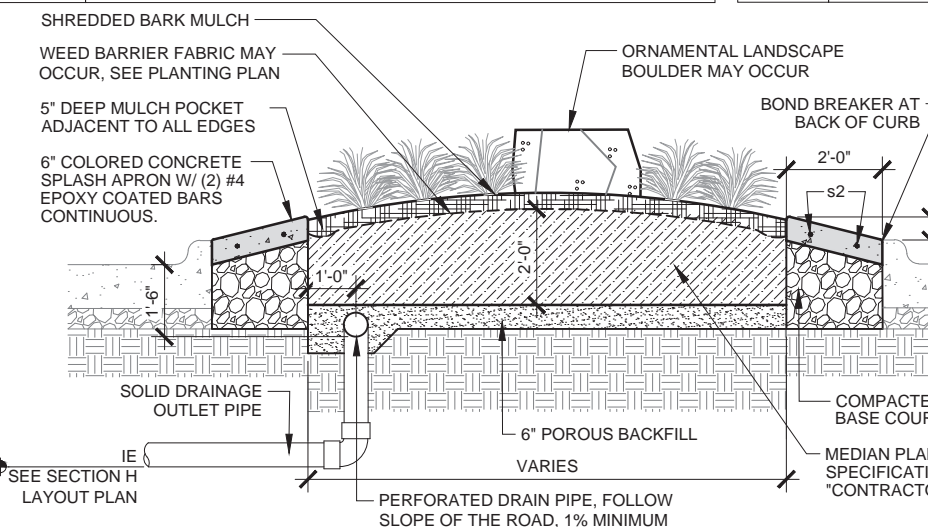
SCALE: 1/2" = 1'-0"

4 H17 5'-0" COLORED CONCRETE APRON

SCALE: 1/4" = 1'-0"

6 H17 COLORED NONREINFORCED PCC PAVEMENT

SCALE: 1/2" = 1'-0"

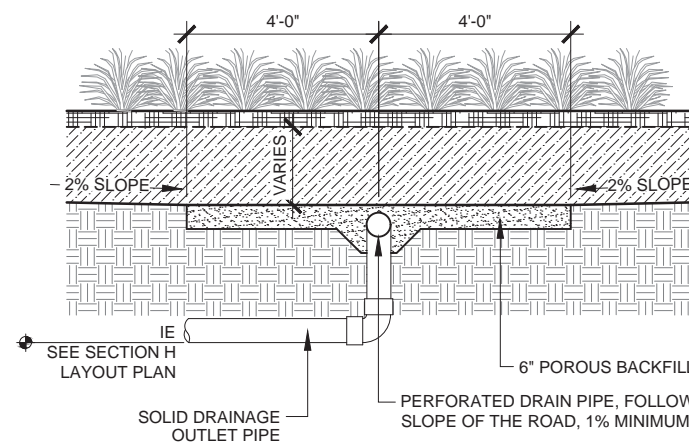


REINFORCING SCHEDULE
(For Colored Concrete Aprons)

Mark	No.	Size	Length	Type
s2	140	4	VARIES	20

SHAPE CODE
20

- 4,848 Lb Reinforcing Steel
- Items are approximate quantities contained in the above contract items and are for information only.

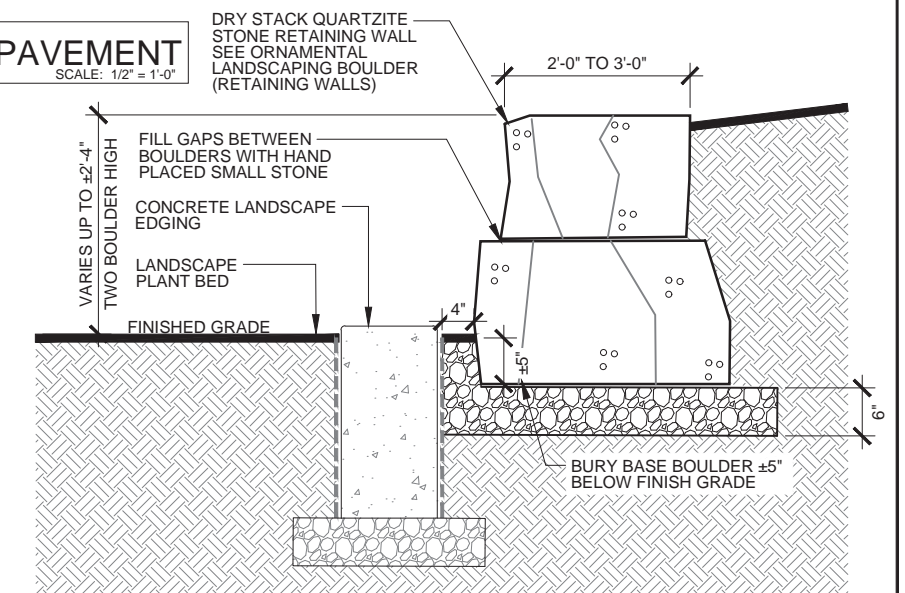


3 H17 TYPICAL MEDIAN SECTION B

SCALE: 1/4" = 1'-0"

5 H17 TYPICAL MEDIAN A UNDERDRAIN SECTION

SCALE: 1/4" = 1'-0"



8 H17 BOULDER RETAINING WALL

SCALE: 1/2" = 1'-0"

Landscape Details

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM-B-CR 2292(101)3	SHEET H18	TOTAL SHEETS H25
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PLOTTING DATE: 11/15/2024

ESTIMATED QUANTITIES		
ITEM	UNIT	QTY.
Landscape Features	Lump Sum	LS

- 98.75 CuYd Unclassified Excavation
- 2,939 Lb Reinforcing Steel
- 26.36 CuYd Class M6 Concrete

Items are approximate quantities contained in the above contract items and are for information only.

NOTE: LANDSCAPE ARCHITECT TO FLAG LOCATION OF EACH FOOTING AND BE ON SITE DURING PLACEMENT OF LANDSCAPE FEATURES TO CONFIRM POSITIONING.

ALL REINFORCING BARS TO BE EPOXY-COATED.

REINFORCING SCHEDULE (For Landscape Features)				
Mark	No.	Size	Length	Type
j1	84	3	6'-3"	75
j2	36	3	13'-7"	75
s1	288	5	5'-0"	20
b1	96	6	7'-4"	38

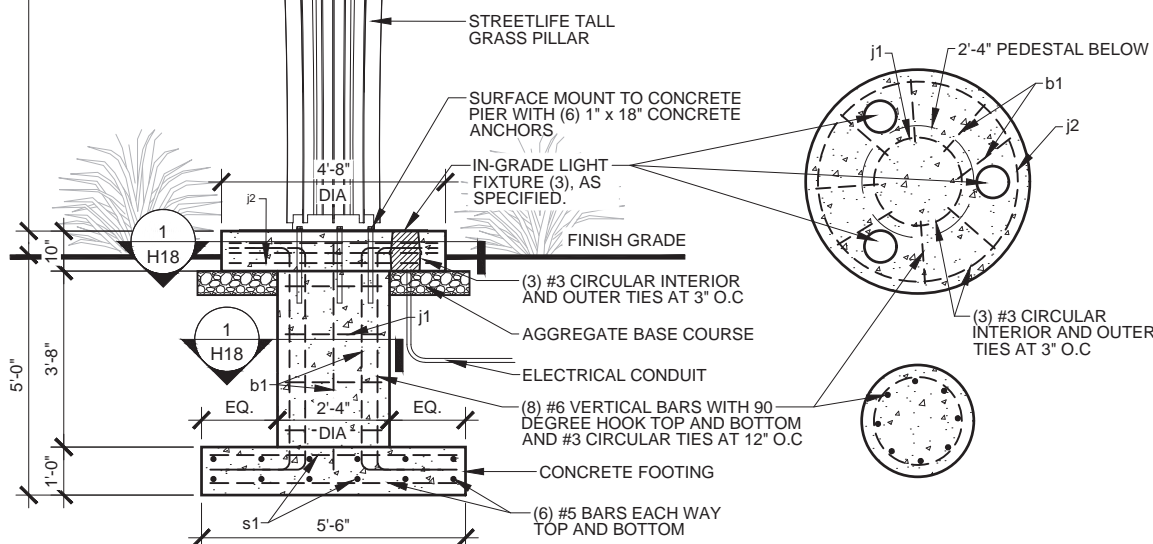
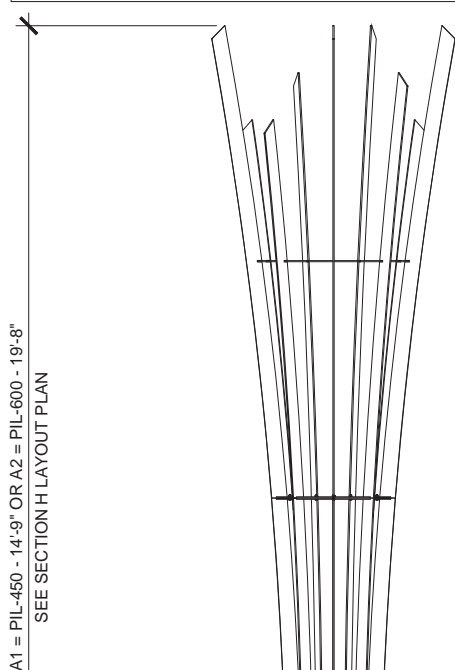
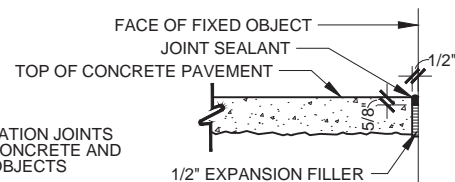
LOCATION		QUANTITY	
STATION	OFFSET	A1	A2
113+95.0	±54' R	0	1
114+03.4	±40' R	1	0
114+12.2	±116' R	1	0
117+33.8	±38' R	1	0
117+44.8	±39' R	0	1
117+73.4	±57' R	1	0
313+13.0	±79' L	1	0
313+57.4	±36' L	1	0
313+67.7	±45' L	0	1
317+17.4	±106' L	1	0
317+23.3	±41' L	0	1
317+36.2	±47' L	1	0
TOTAL		8	4

IN-GRADE LIGHT FIXTURE - BASIS OF DESIGN
 MANUF: HYDREL | HYDREL.ACQUIRYBRANDS.COM
 MODEL: ACUITY HYDREL IGF6
 FINISH: STAINLESS STEEL

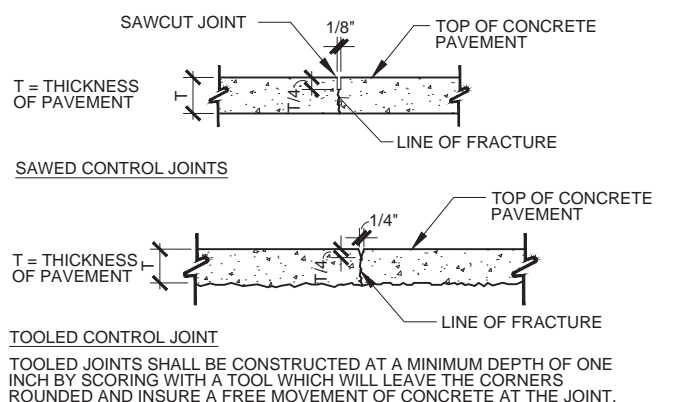
ORNAMENTAL LANDSCAPE FEATURE - BASIS OF DESIGN
 MANUF: STREETLIFE | STREETLIFE.NL/US.COM
 MODEL: HG-PIL-450-CT+LED HHAT
 HG-PIL-600-CT+LED HHAT



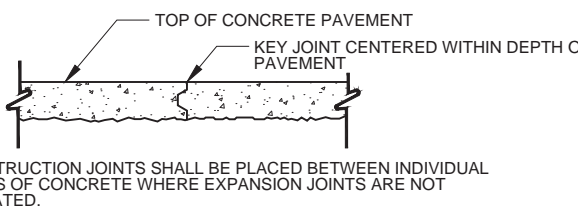
NOTE: PLACE ISOLATION JOINTS BETWEEN CONCRETE AND ALL FIXED OBJECTS



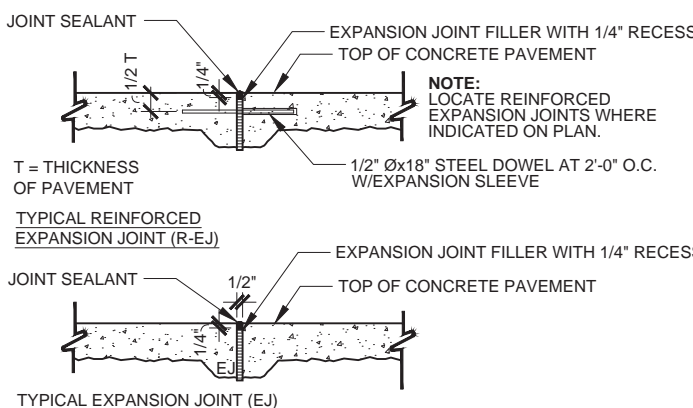
2 H18 ISOLATION JOINT NOT TO SCALE



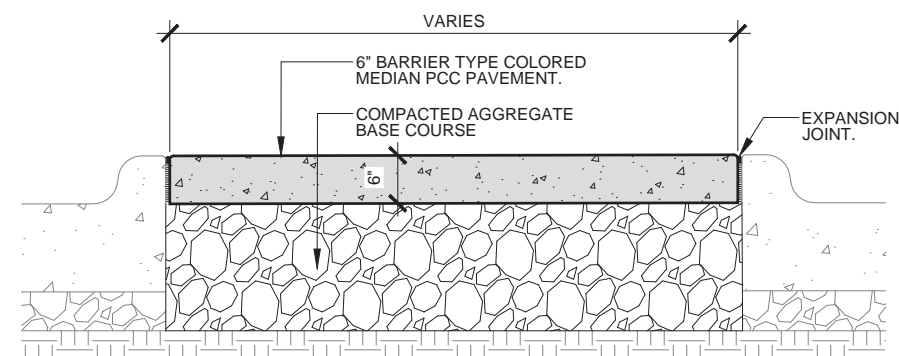
3 H18 CONTROL JOINT NOT TO SCALE



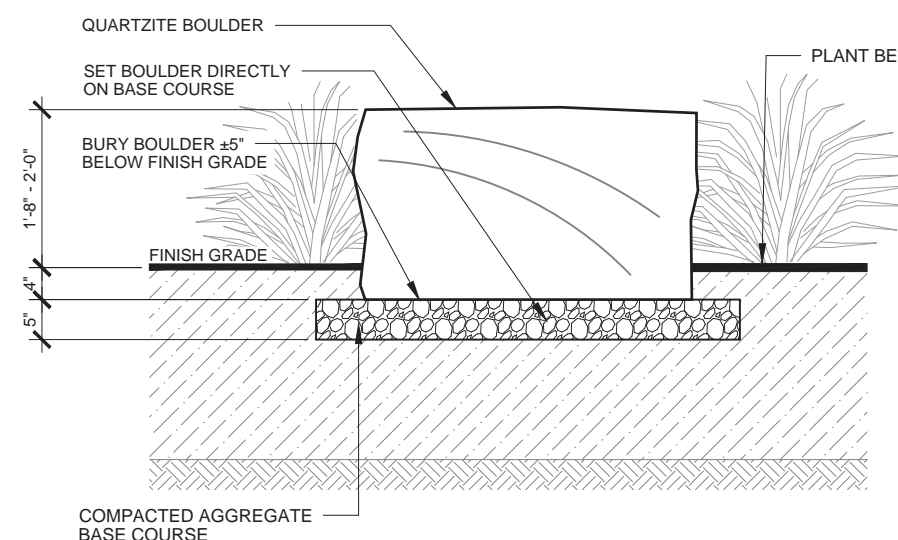
4 H18 CONSTRUCTION JOINT NOT TO SCALE



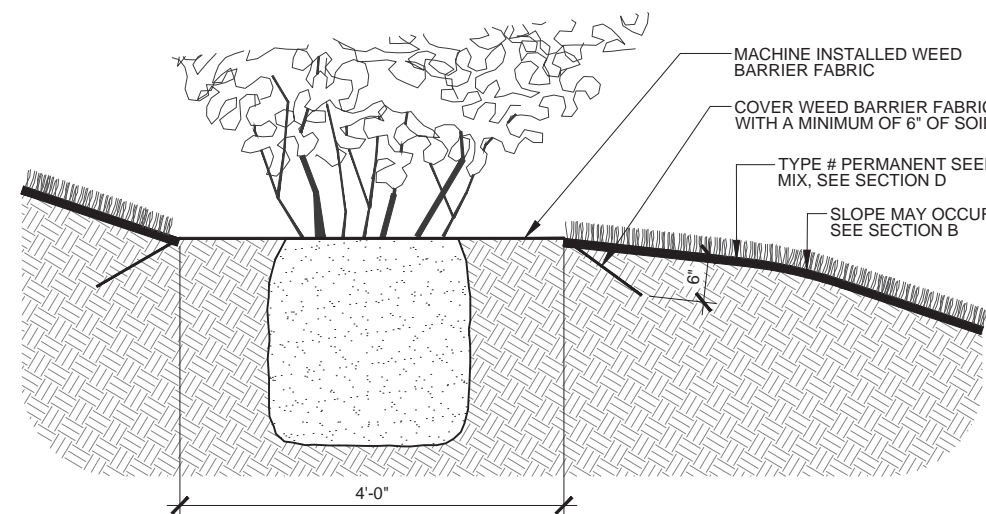
5 H18 EXPANSION JOINT NOT TO SCALE



6 H18 6" BARRIER TYPE COLORED MEDIAN PCC PAVEMENT SCALE: 1/2" = 1'-0"



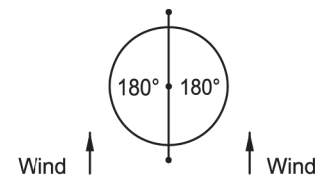
7 H18 ORNAMENTAL LANDSCAPE BOULDER SCALE: 1/2" = 1'-0"



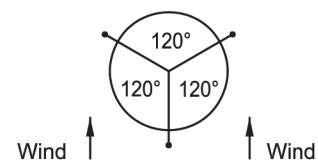
8 H18 MACHINE INSTALLED WEED BARRIER FABRIC SCALE: 1/2" = 1'-0"

1 H18 ORNAMENTAL LANDSCAPE FEATURE SCALE: 1/4" = 1'-0"

PLOTTING DATE: 11/15/2024

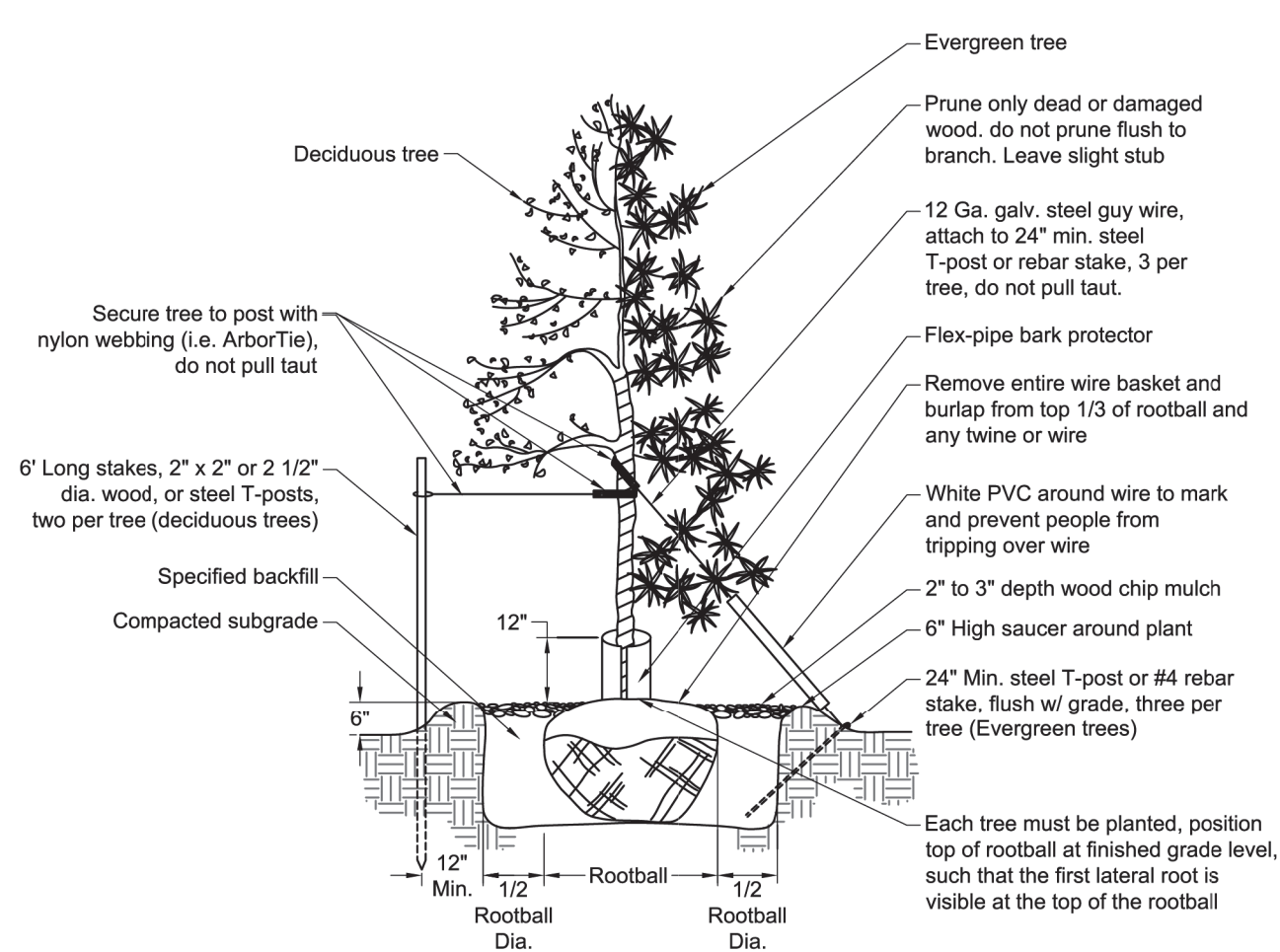


Guying Pattern For Deciduous Tree Planting



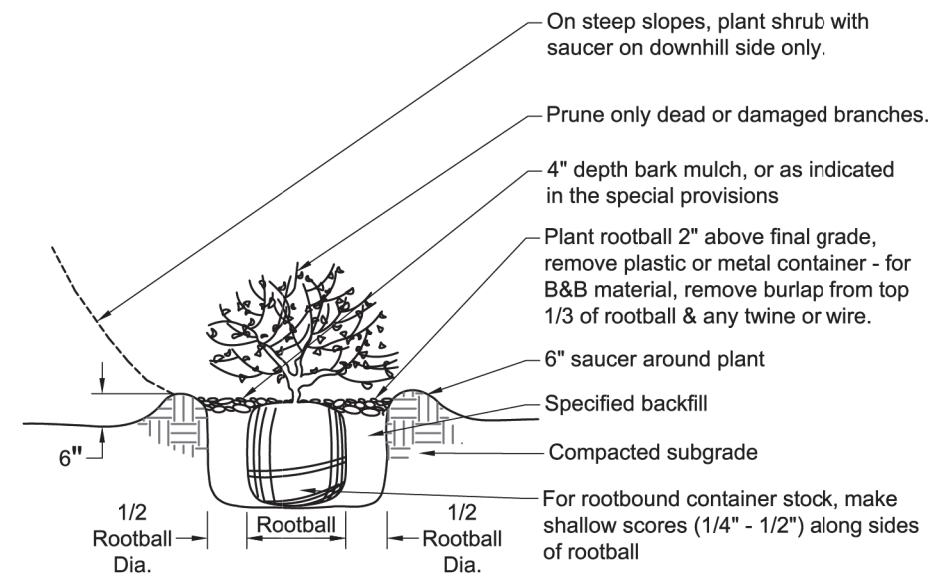
For trees on 4:1 or steeper slopes, place 2 guys upslope, one downslope; otherwise place for prevailing wind.

Guying Pattern For Evergreen Tree Planting




Deciduous and Evergreen Tree Planting and Guying Detail

(Guy and stake deciduous trees 2" and larger caliper and coniferous trees over 4' ht.)
Not to scale



Shrub Planting Detail
Not to scale

Revised: February 2021

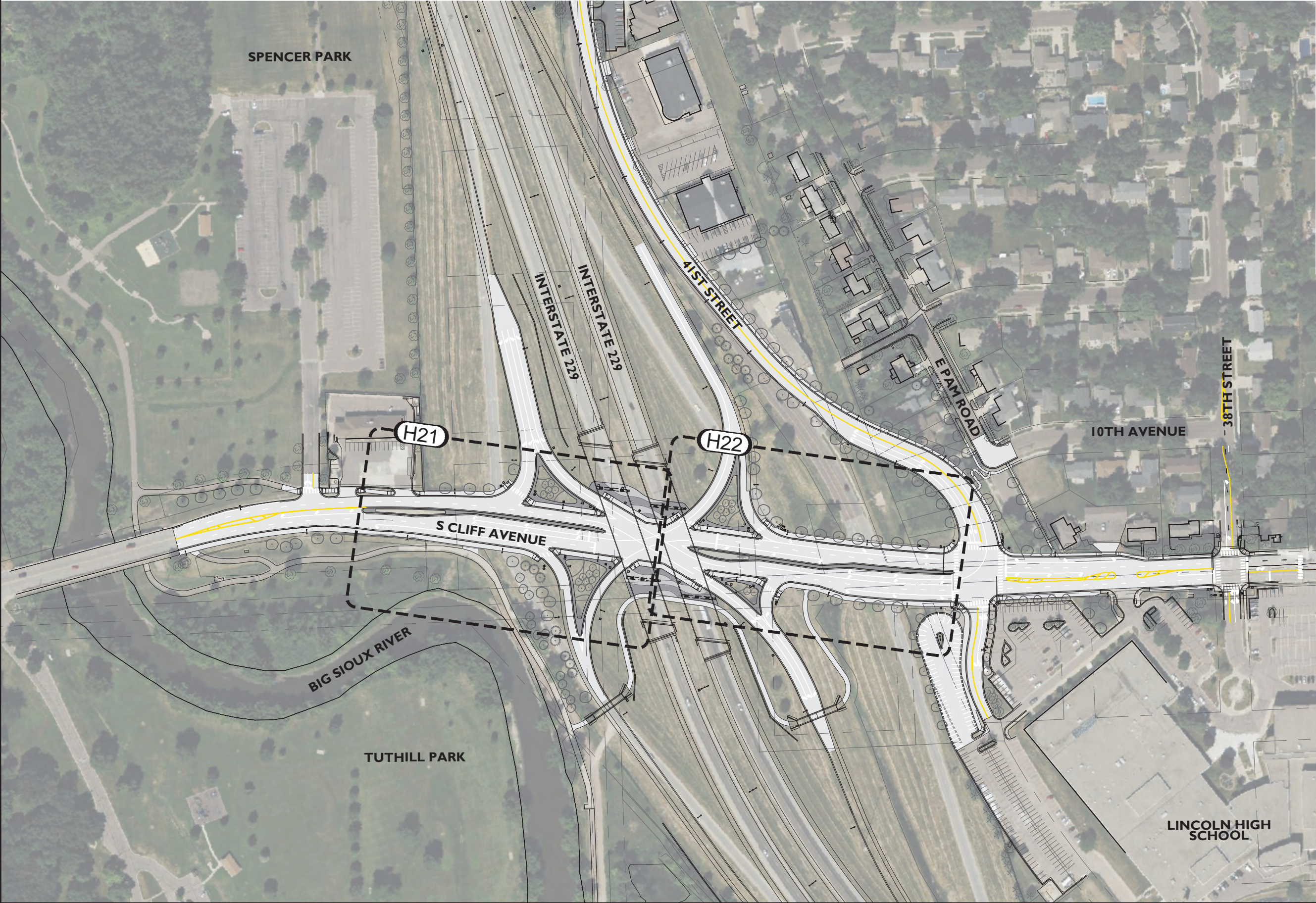
Tree Planting		
 <p>CITY OF SIOUX FALLS PUBLIC WORKS Providing a Better Quality of Life for You!</p>	Specification Reference No. Special	Plate Number 1100.01 SP

Irrigation Plan

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H20	H25

PLOTTING DATE: 11/15/2024



Irrigation Plan

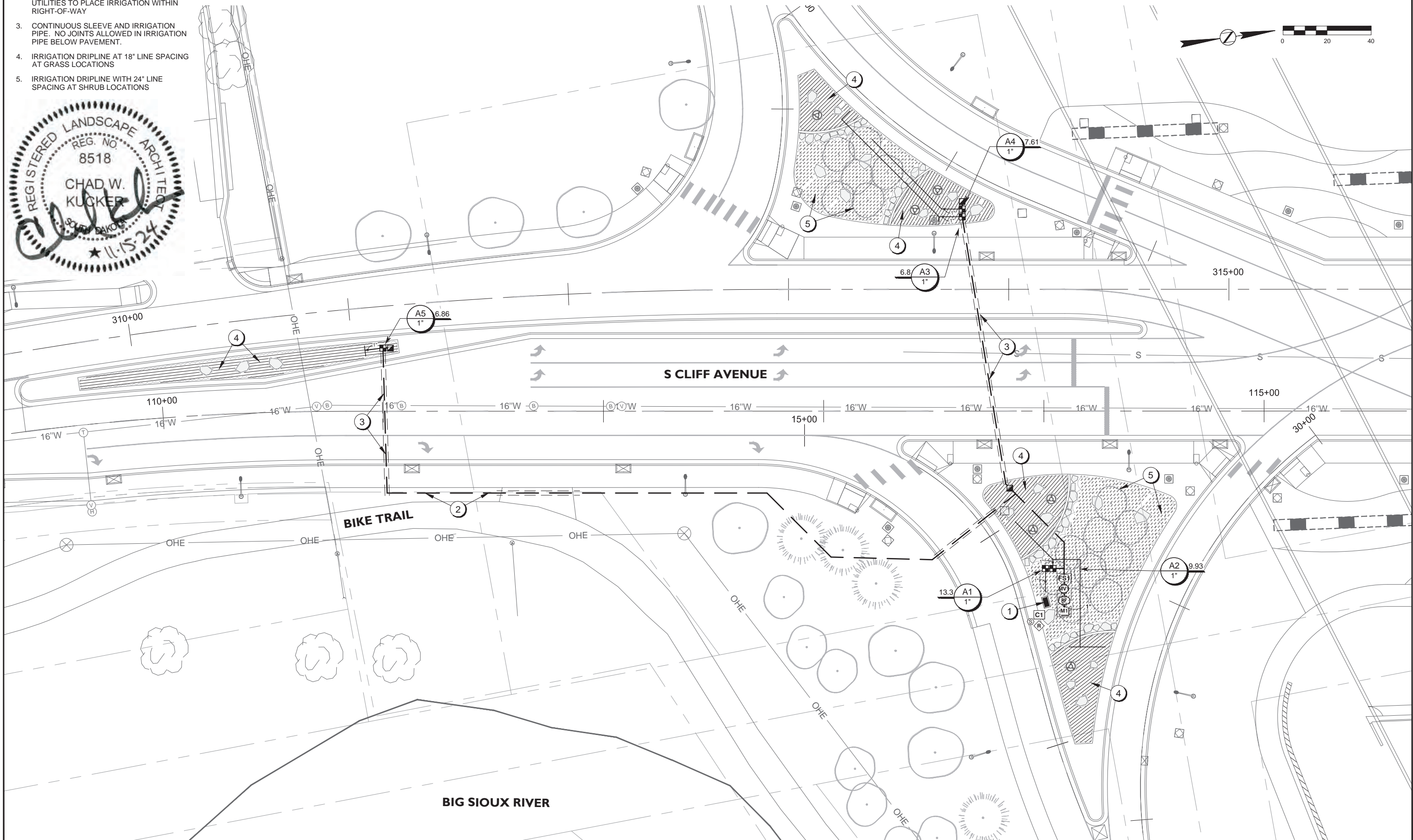
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H21	H25

PLOTTING DATE: 11/15/2024

KEYNOTES

1. IRRIGATION METER, BACKFLOW AND ENCLOSURE
2. COORDINATE WITH ENGINEER AND UTILITIES TO PLACE IRRIGATION WITHIN RIGHT-OF-WAY
3. CONTINUOUS SLEEVE AND IRRIGATION PIPE. NO JOINTS ALLOWED IN IRRIGATION PIPE BELOW PAVEMENT.
4. IRRIGATION DRIPLINE AT 18" LINE SPACING AT GRASS LOCATIONS
5. IRRIGATION DRIPLINE WITH 24" LINE SPACING AT SHRUB LOCATIONS



Irrigation Plan

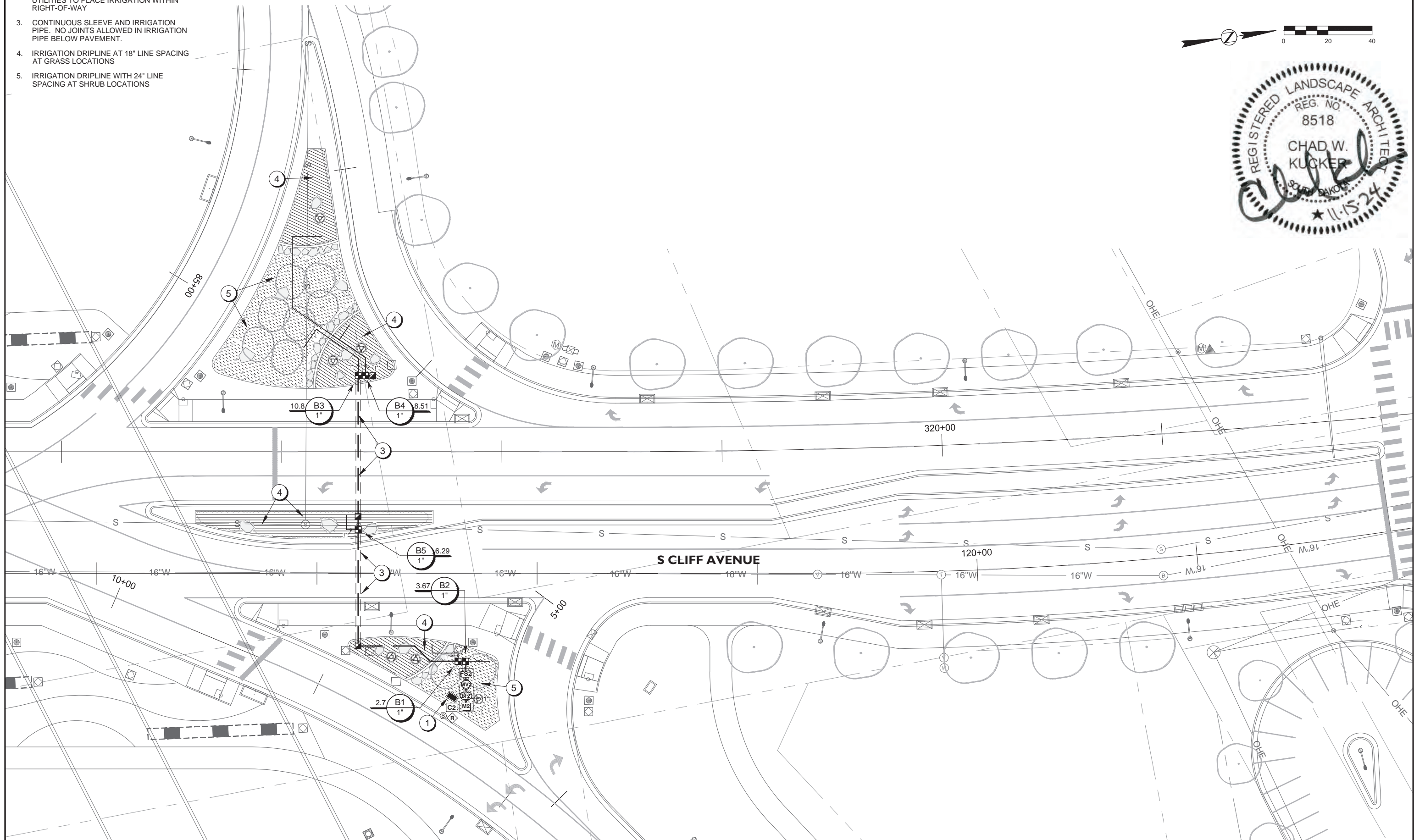
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H22	H25

PLOTTING DATE: 11/15/2024

KEYNOTES

1. IRRIGATION METER, BACKFLOW AND ENCLOSURE
2. COORDINATE WITH ENGINEER AND UTILITIES TO PLACE IRRIGATION WITHIN RIGHT-OF-WAY
3. CONTINUOUS SLEEVE AND IRRIGATION PIPE. NO JOINTS ALLOWED IN IRRIGATION PIPE BELOW PAVEMENT.
4. IRRIGATION DRIPLINE AT 18" LINE SPACING AT GRASS LOCATIONS
5. IRRIGATION DRIPLINE WITH 24" LINE SPACING AT SHRUB LOCATIONS

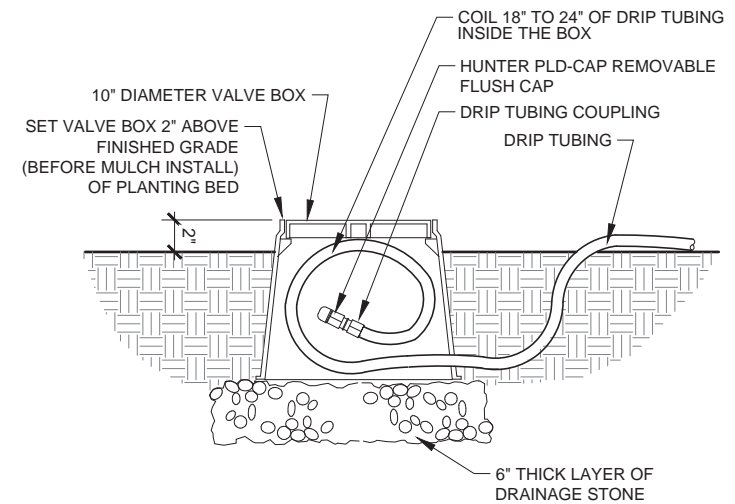
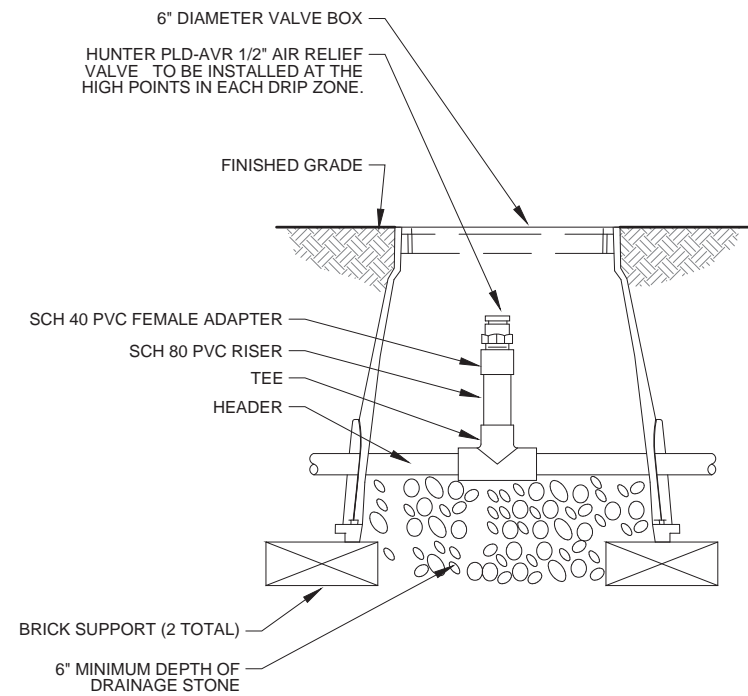
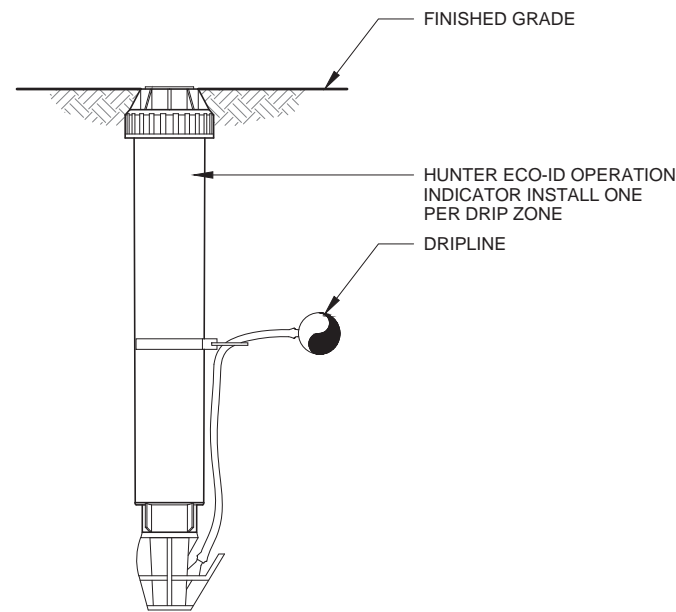


Irrigation Details

FOR BIDDING PURPOSES ONLY

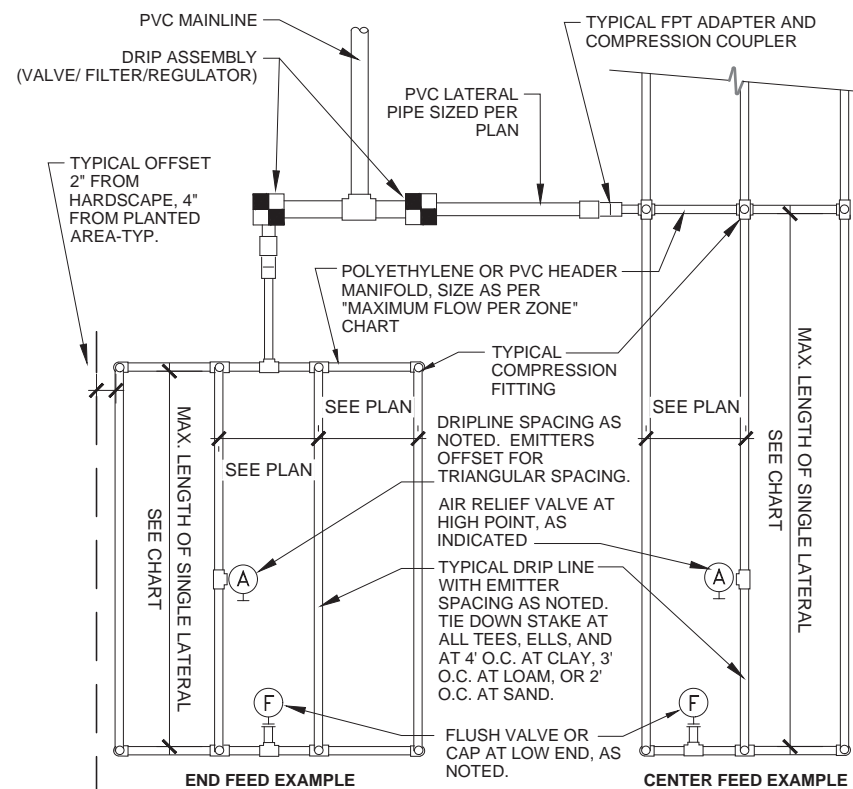
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-B-CR 2292(101)3	H23	H25

PLOTTING DATE: 11/15/2024



- NOTE:**
1. LOCATE FLUSH CAP ASSEMBLY AT THE END OF EACH DRIP LINE.
 2. ENSURE THAT THE COILED TUBING IS OF SUFFICIENT LENGTH TO COMPLETELY EXTEND OUT OF THE VALVE BOX WHEN FLUSHING.

2 H23 DRIP OPERATION INDICATOR NOT TO SCALE



3 H23 AIR RELIEF VALVE NOT TO SCALE

INLET PSI	MAXIMUM LATERAL LENGTH (FEET)								
	EMITTER SPACING								
	0.4 GPH		0.6 GPH		1.0 GPH				
15	289	401	502	173	240	300	126	176	222
20	354	494	620	230	320	402	169	235	295
25	405	563	706	265	373	471	197	276	346
30	441	621	783	299	417	523	218	308	390
35	481	671	842	333	462	580	240	337	425
40	508	719	910	342	483	611	263	362	452
45	542	755	949	364	518	657	271	384	486
50	558	784	988	387	543	685	288	401	503

EMITTER FLOW	FLOW PER 100 FT (GPM)		
	12\"/>		
0.4 GPH	0.67 GPM	0.44 GPM	0.33 GPM
0.6 GPH	1.0 GPM	0.67 GPM	0.50 GPM
1.0 GPH	1.67 GPM	1.11 GPM	0.83 GPM

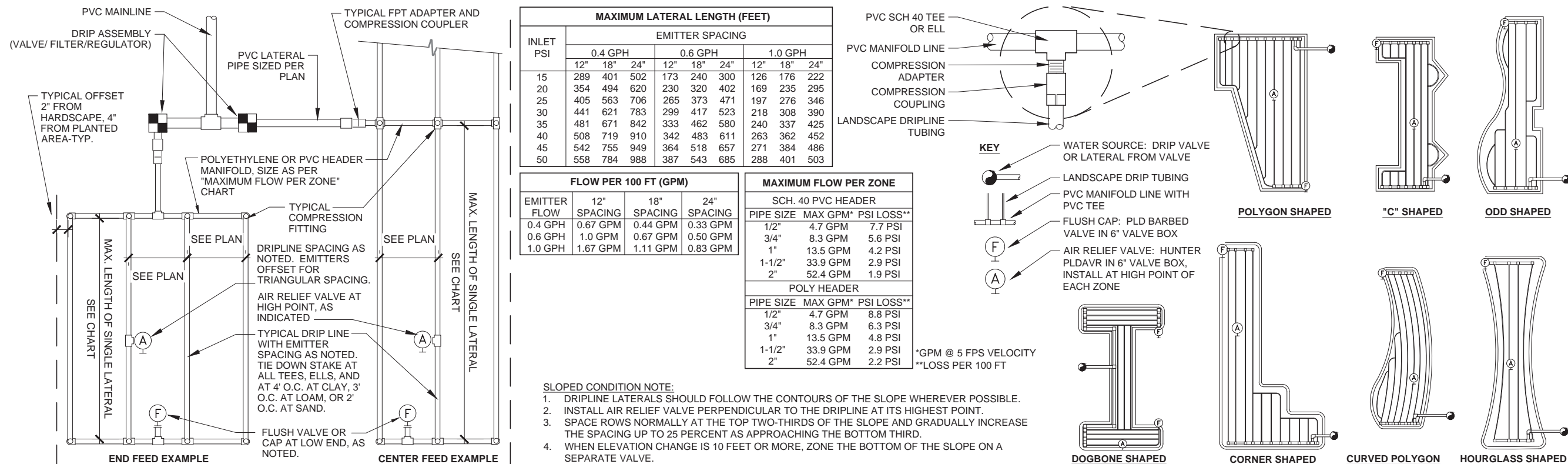
MAXIMUM FLOW PER ZONE		
SCH. 40 PVC HEADER		
PIPE SIZE	MAX GPM*	PSI LOSS**
1/2"	4.7 GPM	7.7 PSI
3/4"	8.3 GPM	5.6 PSI
1"	13.5 GPM	4.2 PSI
1-1/2"	33.9 GPM	2.9 PSI
2"	52.4 GPM	1.9 PSI
POLY HEADER		
PIPE SIZE	MAX GPM*	PSI LOSS**
1/2"	4.7 GPM	8.8 PSI
3/4"	8.3 GPM	6.3 PSI
1"	13.5 GPM	4.8 PSI
1-1/2"	33.9 GPM	2.9 PSI
2"	52.4 GPM	2.2 PSI

*GPM @ 5 FPS VELOCITY
**LOSS PER 100 FT

SLOPED CONDITION NOTE:

1. DRIPLINE LATERALS SHOULD FOLLOW THE CONTOURS OF THE SLOPE WHEREVER POSSIBLE.
2. INSTALL AIR RELIEF VALVE PERPENDICULAR TO THE DRIPLINE AT ITS HIGHEST POINT.
3. SPACE ROWS NORMALLY AT THE TOP TWO-THIRDS OF THE SLOPE AND GRADUALLY INCREASE THE SPACING UP TO 25 PERCENT AS APPROACHING THE BOTTOM THIRD.
4. WHEN ELEVATION CHANGE IS 10 FEET OR MORE, ZONE THE BOTTOM OF THE SLOPE ON A SEPARATE VALVE.

1 H23 DRIPLINE NOT TO SCALE



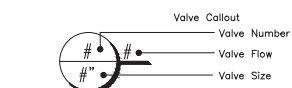
Irrigation Schedule

FOR BIDDING PURPOSES ONLY

PLOTTING DATE: 11/15/2024

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Hunter ICZ-101-25 1" Drip Control Zone Kit. 1in. ICV Globe Valve with 1in. HY100 filter system. Pressure Regulation: 25psi. Flow Range: 2 GPM to 20 GPM. 150 mesh stainless steel screen.	10
	Area to Receive Dripline Hunter HDL-06-12-CV (18) HDL-06-12-CV: Hunter Dripline w/ 0.6 GPH emitters at 12" O.C. Check valve, dark brown tubing with gray striping. Dripline laterals spaced at 18" apart, with emitters offset for triangular pattern. Install with Hunter PLD barbed or PLD-LOC fittings.	4,109 l.f.
	Area to Receive Dripline Hunter HDL-06-12-CV (24) HDL-06-12-CV: Hunter Dripline w/ 0.6 GPH emitters at 12" O.C. Check valve, dark brown tubing with gray striping. Dripline laterals spaced at 24" apart, with emitters offset for triangular pattern. Install with Hunter PLD barbed or PLD-LOC fittings.	3,536 l.f.
SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	Hunter HQ-44RC-AW 1" Quick coupler valve, yellow rubber cover, red brass and stainless steel, with 1" NPT inlet, 2-piece body. Acme key with Anti-Rotation wings.	6
	Hunter ICV-G 1" Electric Master Valve, Globe Configuration.	1
	Hunter ICV-G 1" Electric Master Valve, Globe Configuration.	1
	Zurn 375XL 1" Reduced Pressure Principle Assembly.	1
	Zurn 375XL 1" Reduced Pressure Principle Assembly.	1
	Hunter ICC2-0800-SS EZ-DM Outdoor Controller with EZ-DM decoder output module. Plug-in module converts any ICC2 controller to 2-wire decoder system. Stainless Steel Wall Mount.	1
	Hunter ICC2-0800-SS EZ-DM Outdoor Controller with EZ-DM decoder output module. Plug-in module converts any ICC2 controller to 2-wire decoder system. Stainless Steel Wall Mount.	1
	Hunter EZ-1 Single Station EZ Decoder for use with EZDM Decoder Module Only. To be installed on Universal Decoder Stake Kit (DECSTAKE10).	10
	Hunter ROAMLX-R Receiver Only. Roam Remote allows for controller operation up to 2 miles. Remote transmitter is not required.	2
	Hunter WR-CLIK Rain Sensor, install within 1000 ft of controller, in line of sight. 22-28 VAC/VDC 100 mA power from timer transformer. Mount to light pole.	2
	Hunter HFS-100 Flow Sensor for use with ACC controller, 1" Schedule 40 Sensor Body, 24 VAC, 2 amp.	1
	Hunter HFS-100 Flow Sensor for use with ACC controller, 1" Schedule 40 Sensor Body, 24 VAC, 2 amp.	1
	Water Meter 1"	1
	Water Meter 1"	1
	Irrigation Lateral Line: HDPE PE4710 DR 15 1"	441.2 l.f.
	Irrigation Mainline: HDPE PE4710 DR 15 1"	785.8 l.f.
	Pipe Sleeve: PVC Schedule 40 Typical pipe sleeve for irrigation pipe. Pipe sleeve size shall allow for irrigation piping and their related couplings to easily slide through sleeving material. Extend sleeves 18 inches beyond edges of paving or construction.	367.0 l.f.



CRITICAL ANALYSIS

Generated: 2024-08-14 15:38

P.O.C. NUMBER: 01
Water Source Information:

FLOW AVAILABLE
Water Meter Size: 1"
Flow Available: 18.2 GPM

PRESSURE AVAILABLE
Static Pressure at POC: 90 PSI
Elevation Change: 5.00 ft
Service Line Size: 1"
Length of Service Line: 20 ft
Pressure Available: 86 PSI

DESIGN ANALYSIS
Maximum Station Flow: 13.27 GPM
Flow Available at POC: 18.2 GPM
Residual Flow Available: 4.93 GPM

Design Pressure: 30 PSI
Friction Loss: 0.11 PSI
Fittings Loss: 0.01 PSI
Elevation Loss: 0 PSI
Loss through Valve: 6.12 PSI
Pressure Req. at Critical Station: 36.2 PSI
Loss for Fittings: 0.52 PSI
Loss for Main Line: 5.2 PSI
Loss for POC to Valve Elevation: 0 PSI
Loss for Backflow: 14 PSI
Loss for Master Valve: 2.69 PSI
Loss for Water Meter: 0.39 PSI
Critical Station Pressure at POC: 59.0 PSI
Pressure Available: 86 PSI
Residual Pressure Available: 27.0 PSI

CRITICAL ANALYSIS

Generated: 2024-08-14 15:37

P.O.C. NUMBER: 02
Water Source Information:

FLOW AVAILABLE
Water Meter Size: 1"
Flow Available: 18.2 GPM

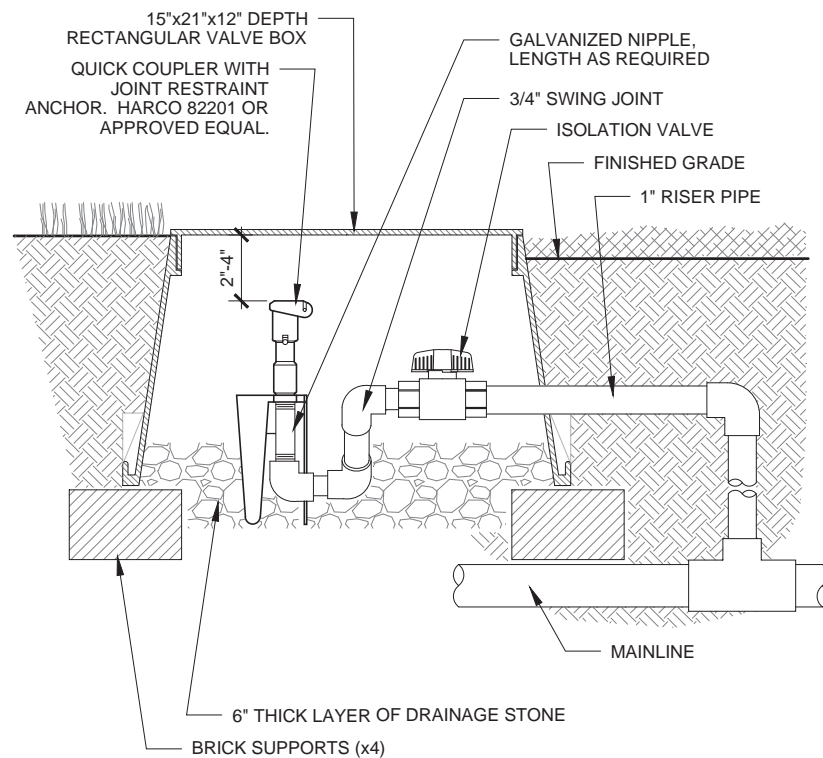
PRESSURE AVAILABLE
Static Pressure at POC: 90 PSI
Elevation Change: 6.00 ft
Service Line Size: 1"
Length of Service Line: 20 ft
Pressure Available: 86 PSI

DESIGN ANALYSIS
Maximum Station Flow: 10.82 GPM
Flow Available at POC: 18.2 GPM
Residual Flow Available: 7.38 GPM

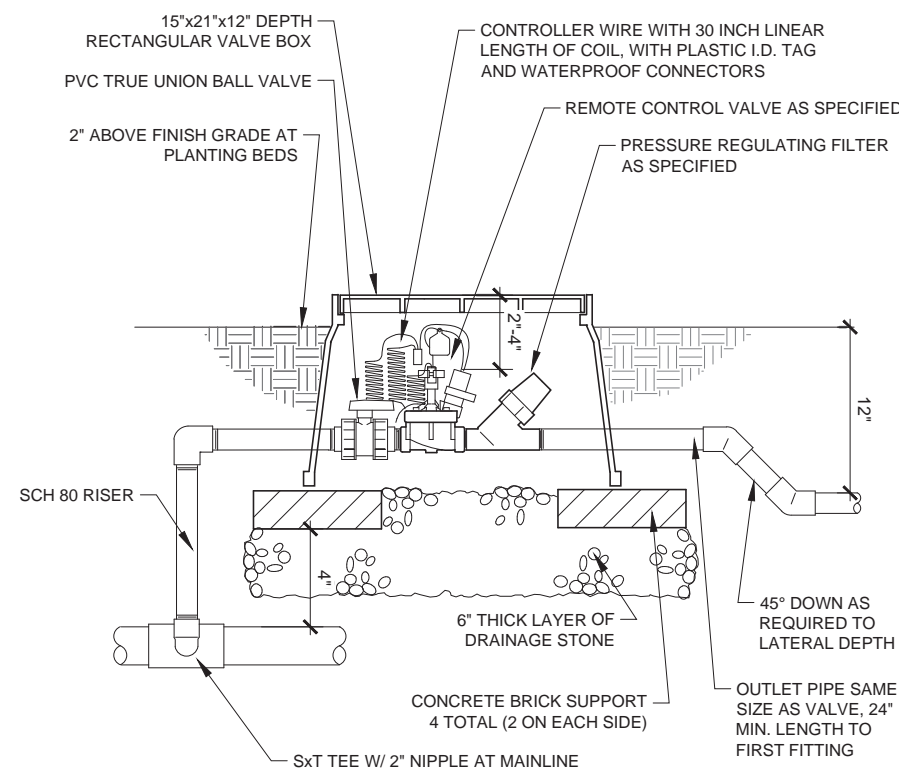
Design Pressure: 30 PSI
Friction Loss: 0.76 PSI
Fittings Loss: 0.08 PSI
Elevation Loss: 0 PSI
Loss through Valve: 7.11 PSI
Pressure Req. at Critical Station: 37.9 PSI
Loss for Fittings: 0.35 PSI
Loss for Main Line: 3.53 PSI
Loss for POC to Valve Elevation: 0 PSI
Loss for Backflow: 14 PSI
Loss for Master Valve: 2.85 PSI
Loss for Water Meter: 0.55 PSI
Critical Station Pressure at POC: 59.2 PSI
Pressure Available: 86 PSI
Residual Pressure Available: 26.8 PSI

VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM	PSI	PSI @ POC	PRECIP
A1	Hunter ICZ-101-25	1"	Area for Dripline	13.27	35.4	54.7	0.48 in/h
A2	Hunter ICZ-101-25	1"	Area for Dripline	9.93	38.4	56.8	0.64 in/h
A3	Hunter ICZ-101-25	1"	Area for Dripline	6.8	36.4	55.9	0.64 in/h
A4	Hunter ICZ-101-25	1"	Area for Dripline	7.61	32.4	52.8	0.48 in/h
A5	Hunter ICZ-101-25	1"	Area for Dripline	6.86	36.2	59.0	0.64 in/h
B1	Hunter ICZ-101-25	1"	Area for Dripline	2.7	33.5	50.0	0.64 in/h
B2	Hunter ICZ-101-25	1"	Area for Dripline	3.67	29.2	45.8	0.48 in/h
B3	Hunter ICZ-101-25	1"	Area for Dripline	10.82	34.7	58.5	0.48 in/h
B4	Hunter ICZ-101-25	1"	Area for Dripline	8.51	37.9	59.2	0.64 in/h
B5	Hunter ICZ-101-25	1"	Area for Dripline	6.29	35.9	54.3	0.64 in/h

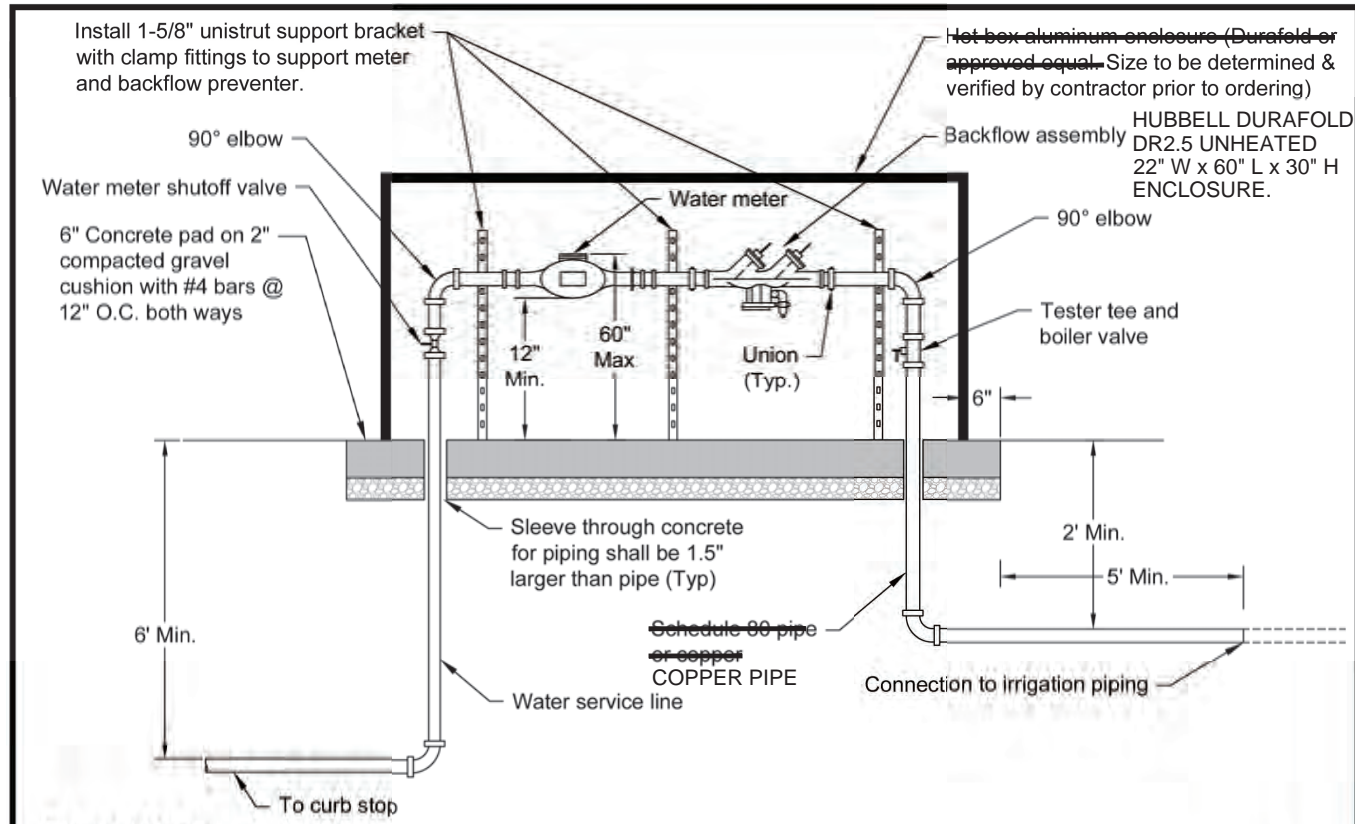


2 H24 QUICK COUPLING VALVE NOT TO SCALE



1 H24 DRIP VALVE NOT TO SCALE

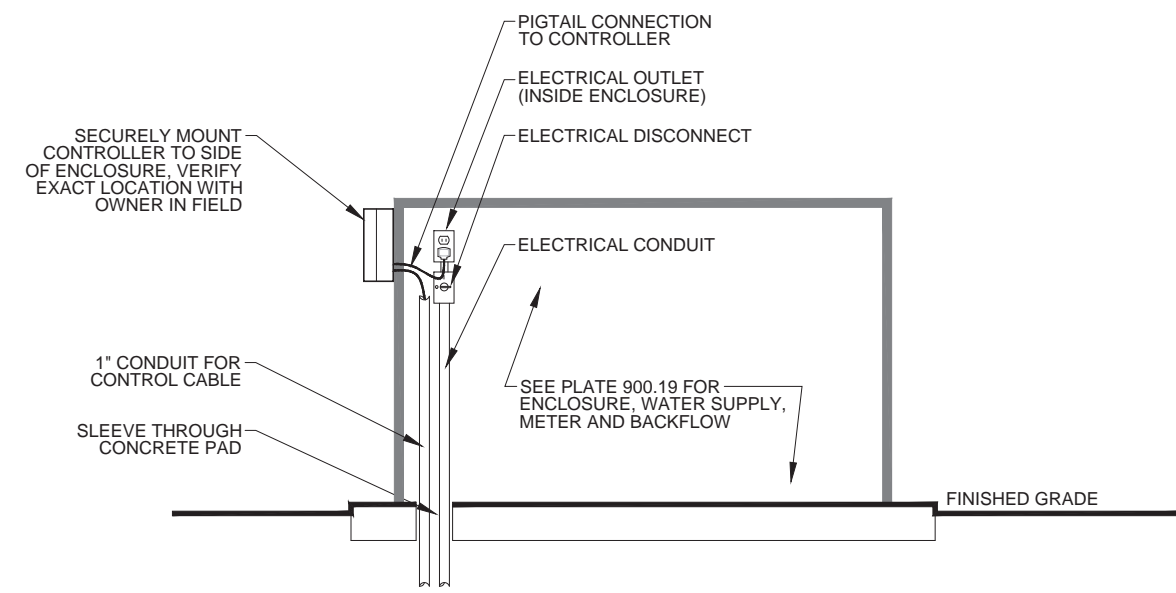




General Notes:

- All enclosures are to be installed and connected onto a concrete base per manufacturer's recommendations and as detailed above. Concrete pad to be constructed with class M6 concrete and footprint shall be 6" beyond enclosure on all sides.
- All backflow assemblies shall be tested by a Water Division approved, certified backflow technician prior to being put into service
- Meter and backflow will be removed by owner during winterization procedures and stored. Install accordingly to allow annual removal.
- Submit shop drawings for approval of aluminum enclosure. Contractor is responsible for providing size recommendations to ensure 12" of interior clearance around all piping and equipment.
- All piping and fittings inside enclosure shall conform to city ordinance and engineering design standards. No galvanized or steel materials allowed upstream of the containment backflow preventer. All fittings and nipples on copper services must be brass or copper and must be flared or threaded NOT soldered, braised, or "pro pressed".
- All piping downstream of the backflow preventer must be copper or schedule 80 PVC. This piping shall extend to a minimum of 2' below concrete slab and a minimum of 5' away from the slab before connection to irrigation piping.
- Keep meters and backflow assemblies centered (L&R) in enclosure.
- For assemblies 3/4" - 2", Wilkins 375XL RP for high hazard, or the Wilkins 350XL DC for low hazard, shall be used. For questions on hazard level contact Water Program Coordinator at 605-373-6971.
- The meter, backflow preventer, and misc. pipe and fittings shall be enclosed as detailed above. Enclosure must be orientated parallel to traffic lanes, and be located at beginning or end of median. For questions on placement contact Park Central Services Supervisor at 605-367-8151
- All costs associated with construction of the meter and backflow enclosure, including the enclosure, concrete base, rebar, and misc hardware shall be included in the unit price per "Meter and Backflow Enclosure." CONTRACT LUMP SUM FOR "IRRIGATION SYSTEM"
- All costs associated with meter and backflow enclosure piping from the curb stop through meter and backflow assembly, to 5' outside the enclosure, shall be included in the unit price per "Meter and Backflow Enclosure." CONTRACT LUMP SUM FOR "IRRIGATION SYSTEM"
- Must have Water Department approval of water meter and backflow assembly.

Issued: March 2024



Roadway Irrigation Water Meter & Backflow Assembly with Enclosure	Specification Reference No. 900	Plate Number 900.19
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